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A MANUAL
FOR THE USE
OF THE Σ 21-469
STATE HIGH SCHOOLS
OF
NORTH DAKOTA

*Prepared by the State Educational Commission
and
Published by the Board of Administration
Bismarck, North Dakota*

1920

(To go into Effect July 1, 1920.)



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Preface:

This manual is published for the use of school officers, superintendents, principals, and teachers. Its purpose is to state conditions of classification and course of study, and to indicate briefly the amount and character of work required in each subject. This manual supersedes all other circulars and letters of instruction from the State Board of Administration.



II. STATUTORY PROVISIONS.

S. B. 134 of the 1919 Session Law provides for a Board of Administration for the general supervision and administration of all state penal, charitable, and educational institutions, and the general supervision of public and common schools of the state. The Board of Administration shall assume all power and perform all duties of the State Board of Education, State Board of Regents, and State Board of Control. In order to carry out in detail the work of administration and supervision the Board of Administration shall appoint an Educational Commission, subject to the direction and approval of the Board, to have charge and supervision of the certification of teachers, standardization of schools, examinations for eighth grades and high school pupils and such other work as may be assigned to it by the Board.

Section 1369 of the Compiled Laws of 1912, as amended in 1915 provided that a graduate of a four-year North Dakota High School who has done work in psychology, school management and methods, and who has pursued successfully three senior reviews may have his diploma accredited as a second grade elementary certificate. The certificate is renewable under certain conditions.

Section 1346 of the 1919 Session Laws provided that upon being petitioned in writing by a majority of the school directors of the county the Board of County Commissioners shall employ one or more licensed physicians or graduate nurses whose duty it shall be to visit the schools of the county and to inspect and examine pupils attending such schools.

The 1917 legislature provided that the third Friday in January should be observed as "Temperance Day" in the public schools.

The 1919 legislature provided that October 12th should be observed as Columbus Day in the public schools of the state.

The 1919 Legislative Assembly passed the following law relative to night schools:

The Board of County Commissioners in each county in the state shall when petitioned by the school board of any common, independent, special or consolidated school district, or the school board of any organized territory annually make an appropriation of five hundred dollars and may levy a tax upon all of the taxable property of the county to raise that amount for the purpose of aiding and promoting night schools established by the school boards of any common, independent, special or consolidated school district, or the school board of any organized territory. Provided, that the school board or board of education in any district receiving aid from the county shall contribute to the maintenance of such evening school an amount equal to the amount received from the county.

Section 5 of S. B. 134, 1919 Session Laws provides that the Board of Administration shall assume the powers and duties of the State Board

of Education, the State Board of Regents and the State Board of Control. Under this provision the following duties and powers are assumed by the State Board of Administration.

The State Board shall have the general supervision over secondary education in the state, and shall perform the duties and have and exercise the powers hereinafter mentioned.

Any public graded school in any city or incorporated village or township, organized into a district, under the township or district system, which shall give instruction according to the terms of this act, and shall admit pupils of either sex from any part of the state without charge for tuition in the secondary school or high school department, shall be entitled to be classified as a state high school, and to receive pecuniary aid as hereinafter specified; provided, however, that no such school shall be required to admit non-resident pupils unless they pass an examination in orthography, reading, English, penmanship, arithmetic, language and grammar, modern geography, and the history of the United States; provided, however, that in case of state high schools having an agricultural department, pupils pursuing courses in said department shall be admitted into the seventh and eighth grades, and secondary school department without charge for tuition.

The said board shall require of the schools applying for such pecuniary aid compliance with the following conditions, to-wit:

1. That there shall be adequate school buildings conforming to modern approved ideas respecting heating, lighting, ventilation and sanitation, and under no circumstances shall aid be given to or continued when the board of education fails or refuses to comply with reasonable requirements of this character.

2. That there shall be regularly and orderly courses of study in the eight grades of the elementary school, together with all subjects prescribed by the said board for the first two years of the secondary school curriculum.

3. That the said secondary school receiving pecuniary aid under this article shall at all times permit members of the State Board of Administration or anyone appointed by said board, to visit and examine the classes pursuing said elementary and secondary school courses, and make recommendations concerning the conduct of such school.

III. SMITH-HUGHES ACT.

Plans for the co-operation of the North Dakota Board of Administration with the Federal Board for Vocational Education provide for a Director and Executive Officer for the Board for Vocational Education. Schools receiving aid under the provisions of the Smith-Hughes Act will be required to report quarterly to the Executive Officer of the Board.

GENERAL CONDITIONS

No school will be approved to receive aid under the provisions of the Smith-Hughes Act until the following conditions are met:

1. The school must be under public supervision or control.
2. Controlling purpose, to fit for useful employment.
3. Less than college grade except as hereinafter provided in the case of institutions training vocational teachers.
4. For persons over fourteen years of age.
5. Every dollar of federal funds must be matched by a dollar of state or local money or both.

6. Money to be expended only for:

- A. Salaries of teachers and supervisors of agriculture.
- B. Salaries of teachers of trades, home economics, and industrial subjects, supervisors of trade, home economics, and industrial subjects, provided that not more than 25 percent of the maximum sum available for teacher training in any of these lines shall be applied to the payment of salaries of state supervisors in those lines. It is understood that not more than 15 percent of the total funds available for teacher training money may be used in all the fields.

C. Maintenance of teacher training schools for teachers, supervisors or directors of agriculture. Maintenance is not to include the purchase, erection, preservation, or repair of any buildings or equipment, or for the purchase or rental of lands, or for the support of any religious or privately owned or conducted school or college.

The following conditions shall be met by all schools receiving Smith-Hughes Aid:

a. At least twenty-five percent of the pupils enrolled in the high school shall be from farm homes at the time the school is approved for Vocational Agriculture, or if less than twenty-five percent of the pupils enrolled in the high school are from farm homes, there shall be at least thirty pupils enrolled in the course in Vocational Agriculture.

b. The school shall have at least ten pupils enrolled in the course in Vocational Agriculture during the first year of its approval and thereafter the school shall have at least six pupils enrolled in the course in vocational agriculture for each year of work in that course, except the fourth year of the course.

c. The school shall admit to the classes in vocational agriculture boys and girls sixteen years of age or over if qualified by experience even if they are not qualified to pursue the ordinary academic studies.

d. The school shall be subject to the supervision and inspection of the State Board or its representatives.

e. The officers and teachers of the school shall furnish promptly all information and make all reports required by the State Board of Administration or its representatives. Reports shall be signed by the

teacher of agriculture and by the superintendent of schools; financial reports by the president or clerk of the board of education.

2. PLANT AND EQUIPMENT

Schools participating in the benefits of state and federal funds for vocational education shall provide satisfactory plant and equipment as follows:

a. A room or rooms equipped primarily for instruction in agriculture and providing ample space and facilities for such class, laboratory and shop work as the course of study shall require.

Boards of schools approved for vocational work in agriculture shall:

a. Provide for maintenance annually a sum which shall be not less than \$5.00 for each student enrolled in the classes in vocational agriculture, from which fund the teacher in agriculture may secure such equipment and material as is necessary from time to time.

b. Provide such other funds as are necessary to maintain such suitable rooms, buildings, equipment, material and supplies as may be necessary to carry on the work successfully and to meet the requirements of the State Board.

c. Employ a teacher approved for the teaching of vocational agriculture for twelve months at a salary not less than \$1600 per year. Said teacher shall have at least one month's vacation during the year.

d. Provide suitable means of transportation to enable the teacher of agriculture properly to supervise the farm project work at the homes of the students.

The course of study offered in all day schools for Vocational Agriculture, including project work, shall be for not less than one school year of nine months. For the first year in which a school applies for approval a one-year course will be approved, and thereafter the course in Vocational Agriculture offered shall include agriculture offered in each year of the high school course; this is to apply to two-year, three-year, and four-year high school courses alike. The course of study shall be arranged so that any student shall be occupied for one half the time (three hours per day) in the study and practice of Vocational Agriculture and for one-half the day in subjects designed to build up a well rounded course of instruction and to promote general intelligence and civic efficiency.

Subjects other than vocational, necessary to make a well rounded course of instruction, shall be taught with the approval of the State Board of Administration and the expense of such instruction shall be paid by the local school board.

Individual Projects. Each student enrolled in the course in Vocational Agriculture shall be required to conduct a productive agricultural project for at least six months of the year.

All approved schools shall provide for supervised practical work in agriculture, either on a farm provided by the school or, preferably, on the pupils home farm, for at least six months of the year. Each student shall be supplied with sufficient land or animals or both to give oppor-

tunity for active practice and project work under conditions which shall conform as nearly as possible to farm conditions, in order that he may be fitted to farm successfully.

Project work shall be under the supervision of the teacher of agriculture. It shall be productive work done on the home farm or some other approved tract. The work shall be definitely planned and an estimate made of the cost of the projects, the amount of land, time, tools, power, stock, buildings, and equipment to be used; and both the student and parent shall sign a written agreement to furnish the required materials and to follow the direction of the teacher. An accurate account shall be kept by the pupil of the cost, receipts, and gain or loss, and he shall prepare a written report or record of the project work and its results. The profits resulting from the project shall be the property of the pupil.

The State Board proposes to establish during the year 1919-1920 trade and industrial education in such trades and industries as present information and further investigation shall justify.

Evening industrial schools or classes, if established shall be subject to the following conditions:

a. The controlling purpose of all evening industrial schools or classes shall be to give instruction supplemental to the day employment of persons who have entered upon a particular trade or industrial pursuit. Instruction in evening schools shall be limited to such subjects as will increase skill or knowledge in the occupation in which the worker is engaged as his daily employment, or as will lead to promotion or advancement in that work.

b. In evening industrial schools instruction may be given only to persons who are over sixteen years of age and who are regularly and permanently employed in such an occupation as the work of that class will supplement. No educational qualification except ability to do the work of the evening school profitably shall be required for entrance to evening schools or classes.

DAY UNIT-TRADE SCHOOLS

a. The purpose of the day unit trade schools or classes shall be to fit for useful employment in a specific trade or vocation. Such classes shall be organized and the work of the class outlined with the view of preparing members of the class to enter upon a specific trade or vocation.

The State Board expects to approve for aid from the Federal and State funds the following kinds of home economics schools and classes:

- (a) Evening Home Economics schools and classes.
- (b) Part-time Home Economics schools and classes.
- (c) All day Home Economics schools and classes.

Two courses of study will be offered and either may be used according to the needs of the schools. One of these shall provide for from two to four years of work in vocational home economics and related subjects and non-vocational subjects. One-half of the school day shall be devoted

to (1) practical work in home economic subjects as garment making, foods and cookery, dressmaking, textiles, millinery, sanitation, home-nursing and home management and (2) related subjects such as applied art and design, sanitation and hygiene, general science, household chemistry, and physics. The remaining half-day will be devoted to instruction in such subjects as English, civics, arithmetic, etc. The other course shall provide for only home economics subjects to be taught in the vocational half-day. The related science and art will be taught with the non-vocational subjects in the non-vocational half-day.

The improvement of teachers in service and also itinerant teacher-training work is considered a function and duty of the State Board of Administration, to be carried on under the supervision of the State Director and his assistants.

It is purposed by the State Board of Administration beginning July, 1920, that those County Agricultural and Training Schools and Special Agricultural High Schools qualifying for and receiving state aid shall be excluded from participating at the same time in the use of federal funds. This is done to insure a wider distribution of financial aid to schools.

Those Special Schools qualifying for and receiving state aid shall meet the requirements as set forth in these plans for the vocational day schools of agriculture, in addition to the requirements as set forth in the State High School Manual. These special schools shall be required to make such reports as required from those schools qualifying and receiving aid under the Smith-Hughes Act.

It is also purposed beginning July, 1920, to use at least one-half of the federal funds, and any special state funds that may be later voted to match the same, in aiding Consolidated High Schools in the open country, the other half to be used in aiding town and city high school departments. It is also understood that increasing funds will be used each year in aiding part-time and evening work in vocational agriculture work in the foregoing types of high schools.

Complete outline of plans for the co-operation of the State Board of Administration with the Federal Board for Vocational Education in the various subjects and courses may be had by addressing State Director and Executive Officer Chauncey E. Cavett, Lisbon, North Dakota.

HIGH SCHOOLS HAVING A SUBSIDIZED AGRICULTURAL DEPARTMENT

Extracts from the Law.

Sec. 1433 (in part) "The said board shall apportion to each of said schools, which shall have fully complied with the provisions of this article, and whose applications shall have been approved by the board, the following sum, to-wit: two thousand five hundred dollars annually to each of the five schools already designated, having an agricultural, manual training and domestic economy department."

"Provided, further, that with the approval of the State Board of Administration the money appropriated by the state to the high schools designated to maintain departments of agriculture, manual training and

domestic economy may be used for the extension of agricultural education and demonstration outside of the district in which the school is located, within the limits of efficiency.

Sec. 1434 Schools to Maintain Departments of Agriculture. How Designated. Requirements. Any state high school having satisfactory rooms, equipment and a tract of land of at least ten acres within one mile from the school house, having shown itself fitted by location and otherwise to do agricultural work, manual training and domestic science and art courses, and meeting such other requirements as the State Board of Education may define, shall upon application be designated by said board to maintain an agricultural department; provided that the high schools now designated and those hereafter designated by said board to maintain departments of agriculture, manual training and domestic economy shall continue to be so designated and aided so long as they comply with the rules and regulations of the State Board of Administration and perform satisfactorily the work contemplated by this section.

Sec. 1435. National and State Aid. One School in County. In addition to the state aid of two thousand five hundred dollars herein provided for a state high school having an agricultural department as defined in Section 1434 of this act, shall receive its proportionate share of all moneys appropriated by the national government for the teaching of elementary or secondary agriculture in the public or high schools of this state; provided, that said high schools having an agricultural department shall not receive more than two thousand five hundred dollars of aid from the state under this act; provided, further, that no more than one high school in any county shall be designated a state high school having an agricultural department and receiving two thousand five hundred dollars state aid.



IV. RULES AND REGULATIONS

A. Application for Classification.

1. High schools desiring classification for state aid shall make application to the Board of Administration through the High School Inspector on or before January 1st of each year, on blanks furnished by the inspector on application.

2. Schools applying for classification after all funds appropriated for aiding high schools are exhausted may be classified as state high schools without aid and be entitled to the same privileges as free state high schools receiving aid.

B. Standards for Classification Required of all Schools

There shall be a well organized elementary school with a course of instruction for such elementary school, corresponding substantially to the eight-year course most recently prescribed by the department of public instruction for common and graded schools, or the courses of the first six years shall be of this nature and the work of the seventh and eighth years may be made to articulate with that of the high school plan and method upon either the Six-Six or the Six-Three-Three plan.

Required of State Agricultural High Schools.

1. There shall be employed as superintendent a competent person of good moral character, who is a graduate of a standard four-year course from a college or university of recognized standing. He shall hold a B. A. or equivalent degree or a first grade professional certificate. He shall have had at least one year of experience as a principal of a graded or a high school or as a superintendent of a school system. He must also be capable of organizing and supervising the extension work of the special departments of his school.

2. There shall be employed at least two teachers of academic subjects and special instructors—one in agriculture, one in manual training, and one in household economy. All of these teachers must be graduates of standard colleges or universities or hold the first grade professional certificate. The special teachers must have had at least two years of thorough training to fit them for their specialties and should have successful teaching experience.

3. The school must provide a sufficient number of well equipped rooms for agriculture, manual training and household economy. There also must be provided ample laboratory facilities for Physics, Chemistry and one other science, together with suitable reference libraries for each. The equipment for agriculture must be sufficient, modern and kept thoroughly up-to-date.

4. There shall be classes in not less than two units each of the three special subjects, viz., agriculture, manual training, and home economics, enrolling not less than twenty well prepared pupils in the aggregate in each special subject.

5. The specialist in agriculture shall be employed for twelve months with a month of vacation granted at some time other than the growing season. He shall receive not less than twelve hundred dollars per year. He should be especially fitted for extension work and for club work among farm boys and girls. This feature of the work must be emphasized. It is recommended that the local districts provide him with an automobile for this purpose.

GENERAL

1. The high school assistants shall give all of their time to the high school; or in case there may be some good reason for having them give some time to the grades, the equivalent of this time shall be returned to the high school by a teacher who is qualified.

2. The work in all state high schools shall be of high order.

3. The superintendent, or principal in third class schools, shall be provided with an office and sufficient assistance in high school and office to allow him one-fourth of all of his time in school hours for general supervision over the grades and high school. In the office of the superintendent or principal there shall be kept on file, circulars, records of equipment, library, enrollment, scholarship, promotions, alumni, pamphlets, and correspondence pertaining to the school.

4. All schools accepting high school aid shall be required to keep such funds separate from the general fund, and said high school aid shall be used for the purchase of library books, laboratory equipment and apparatus, equipment for manual training and household economics, commercial work, etc., provided that after a school is sufficiently equipped the balance of this money yearly may be used for the payment of high school teachers. In the case of the agricultural high schools a considerable portion of the fund should be expended for agricultural equipment and for the payment of the specialist in agriculture.

5. The clerk of the school board of each school receiving aid shall submit to the State Board of Administration through the High School Inspector, not later than April 10th of each year, a detailed statement of all expenditures during the year of money received from state aid for high schools. The state aid for the following year shall be withheld from any school the clerk of which fails to make a satisfactory report of the disbursement of the aid last received on or before April 10th. Blanks for this purpose should be furnished by the High School Inspector to the clerk of school boards and high school principals in September of the current school year.

6. In first and second class high schools, teachers of music, drawing, commercial subjects, and manual training, who do not teach academic subjects in high school, and who do not hold the bachelor's or equivalent degree from an institution of recognized standing, or the first grade professional certificate, granted under the provisions of Section 1363 of

the General School Laws, shall hold special certificates to teach these subjects granted under the provisions of Section 1364, General School Laws, or second grade professional certificates, granted under provisions of Section 1362 of said law.

7. The General School Laws require that all teachers, except those in a few independent districts, shall have certificates to teach, issued by the proper authority of the state.

8. The large classes in a school should not contain more than twenty-five pupils. A teacher should not be required to take charge of more than five classes per day. However, if they are small, containing but four to ten pupils, a teacher may successfully conduct six classes per day, depending somewhat on the subjects taught. One who teaches the subject of English should not be required to instruct more than seventy-five pupils per day.

9. No school shall be classified by the State Board of Administration which has not an efficient heating and ventilating system, and proper sanitary conditions. Medical inspection, including dental inspection, of pupils is recommended.

FIRST CLASS HIGH SCHOOLS

1. There shall be at least eight teachers employed including the superintendent and three high school assistants.

2. There shall be not less than five rooms or departments together with an office for the superintendent, a sufficient number of other rooms for class rooms, library, manual training, and home economics. Ample laboratory facilities shall be provided for Physics or Chemistry or both and there shall be well organized laboratory courses offered in at least three sciences.

3. The superintendent, high school principal and all teachers who teach academic subjects must be graduates of a standard college or university or have obtained the first grade professional certificate equivalent to the same, as provided for in Sections 1363, 1365, and 1366 of 1915 School Laws. Certificates are required of all teachers except in a few cases in independent districts. The superintendent must have had at least one year of experience as a principal of a graded or a high school or as a superintendent of a school system. More experience is recommended.

4. All work of the elementary and high school departments must be maintained at a high order of efficiency. The course of study for the elementary school must include at least the minimum essentials as outlined for the common schools of the state in the most recent Course of Study for Common Schools issued by the State Superintendent of Public Instruction.

5. There shall be at least thirty-six weeks of school each year. Thirty-eight weeks are recommended.

6. The superintendent shall be provided with an office properly equipped for keeping on file all necessary school records of scholarship and equipment.

7. The library, laboratories, special departments and the grade

rooms shall be provided with such equipment, reference books, and other facilities as will insure efficient work. The grade rooms must have at least the minimum equipment prescribed in the graded school manual

8. There shall be offered courses in all the constants prescribed by the State Board of Administration for pupils and for schools. The full four-year course of at least 15 units must be given.

9. The salary of the superintendent shall not be less than \$2,000 and \$2,500 is recommended. The salary of the high school assistants shall not be less than \$125 per month and more is recommended.

10. The teachers employed for grade work in these schools must be fully qualified according to law and must be at least normal graduates of experience or equivalent in grade work. In no case must teachers be employed for grade work in these schools who fall below the requirements for such teachers in other graded and common schools of the state.

11. There shall be proper and sufficient toilet facilities of sanitary character. There should be water flush toilets wherever possible. Where these cannot be provided some approved form of Septic Digestive Toilets should be used. Other types already installed will be acceptable so long as they are in good repair, properly located and well cared for. There must also be a good supply of safe drinking water dispensed through suitable drinking fountains or sanitary containers. Common drinking cups are prohibited. Individual towels or paper towels must be supplied at all lavatories and the lavatories must be kept clean.

12. There shall be an average daily attendance of not less than forty well prepared high school students.

13. The State Board of Administration will refuse to classify as first class any high school in a district having an assessed valuation and a mill tax rate which in the opinion of the board will not assure the proper maintenance of such a school.

14. The superintendent shall have ample time, and it is made a part of his duty to thoroughly supervise all of the work of the elementary and high school departments. In small schools one-fourth of his time should be so used.

SECOND CLASS HIGH SCHOOLS

Unless specifically otherwise stated all rules preceding apply to the high schools of this class.

1. There shall be not less than five rooms or departments and two additional rooms for laboratory and recitation purposes besides suitable equipment and quarters for manual training and home economics.

2. There shall be at least seven teachers including the superintendent and two assistants in high school. The superintendent, high school principal, and teachers of academic subjects in high school, must be graduates of a standard college or university or hold first grade professional certificates equivalent to the same. The superintendent must have had at least one year of successful experience as superintendent of a system of at least five teachers or as principal of a third class high school in North Dakota.

3. There shall be ample library and laboratory facilities and courses offered in at least two laboratory sciences.

4. The superintendent shall receive a minimum salary of sixteen hundred dollars. Two thousand is recommended. High school assistants shall receive not less than \$125.00 per month and more is recommended.

5. There shall be a daily attendance of at least thirty well prepared high school students.

6. Three-fourths of the subjects in the list of constants prescribed by the State Board of Administration including manual training and home economics shall be taught if students are available.

THIRD CLASS HIGH SCHOOLS

1. There shall be not less than four rooms or departments and at least one laboratory and recitation room.

2. There shall be not less than five teachers including the principal and one assistant in high school. In case four years of high school work is given, by alternation or otherwise, the principal and the assistant in high school must be graduates of a standard college or university or hold a first grade professional certificate equivalent to the same. See Sections 1362-66 School Laws. If four years of work is not done the principal and high school assistants may hold second grade professional certificates although this is not recommended.

3. The salary of the principal shall be at least \$1350 per year, but \$1500 is recommended. The salary of the high school assistant shall be at least \$125 per month and more is recommended.

4. There shall be a daily attendance of at least twenty well prepared high school students.

5. There shall be ample laboratory facilities for instruction in laboratory science and at least one unit of such science shall be required each year.

6. All other rules of the State Board of Administration as prescribed for other high schools and not specifically changed by the above rules apply to all third class high schools.

D. CONDUCT OF SCHOOLS.

1. All pupils completing admission to Senior High School must have completed in a satisfactory manner the work of the first nine years of the public school. Before completing admission to Junior High School pupils must have completed in a satisfactory manner the work of the first six grades of the Elementary School. Before completing admission to a four-year high school course pupils must have completed in a satisfactory manner the work of the eight grades of the Elementary School.

2. ALL COURSES ARE TO BE PURSUED AT LEAST THIRTY-SIX WEEKS, FIVE FORTY-MINUTE PERIODS PER WEEK FOR ONE UNIT OF CREDIT AND AT LEAST EIGHTEEN WEEKS, FIVE FORTY-MINUTE PERIODS PER WEEK FOR A HALF-UNIT OF CREDIT. ALL CLASS ROOM RECITATIONS MUST BE FORTY

MINUTES IN THE CLEAR. IN LABORATORY SUBJECTS THERE MUST BE AT LEAST TWO EIGHTY-MINUTE LABORATORY PERIODS PER WEEK. MORE LABORATORY WORK IS RECOMMENDED. SUPERVISED STUDY IS URGED IN ALL HIGH SCHOOLS. IN SCHOOLS HAVING SUPERVISED STUDY WHERE RECITATION AND STUDY PERIODS ARE COMBINED, PERIODS RANGING FROM SIXTY TO EIGHTY MINUTES ARE RECOMMENDED.

3. English I, English II, and either English III or English IV, Advanced U. S. History, Civil Government, one-half unit of Elementary Economics, one-half unit of Sociology, one unit of Science, and one unit of Physical Training, allowing one quarter unit of credit each year of the high school course, are constants for the pupil. No pupil will be graduated from any state high school without successfully having completed these subjects. High schools of the first class are required to do a minimum of fifteen units of high school work; high schools of the second class twelve units, and schools of the third class eight units of work. High schools of the first class shall include in their program each year all of the constants so designated in the list under Program of Studies, second class schools shall include three-fourths of the list of constants, among which shall be a unit of Mathematics and three units of English and one unit of Science; third class schools shall include one-half of the list of constants, among which shall be English I and English II and one unit of Science, preferably Agriculture. All high schools are urged to offer at least one unit of work in Agriculture. Manual Training and Home Economics are required of all first and second class high schools if students are available.

No course, except it be a constant for the pupil, should be offered unless a class of four or more pupils can be organized.

4. The minimum number of units of work required of pupils for graduation shall be fifteen (15) and no state high school whether first, second or third class, shall graduate pupils who have not secured fifteen units of credit; but schools may have exercises and give certificates to pupils who have completed a smaller number of units of work.

5. Superintendents, principals, and boards of education are urged to adopt measures to secure the pursuit by pupils of such courses as will be for the pupil's greatest benefit and make his high school course have thoroughness, strength and unity.

6. The superintendent or principal of every state high school shall require that every pupil graduating from said high school shall be well informed in Reading, Writing, Spelling, Geography, English Language and Grammar, United States History, Arithmetic, Human Physiology and Hygiene, and Civil Government.

7. Music and Drawing shall be offered in every high school but pupils, individually, may elect to pursue these subjects or not to pursue them. Schools shall also offer courses in the elective Sciences and shall be equipped for this work as specified under Classification of Schools. See Syllabus for Music.

8. Credits shall not be allowed in both of two subjects that are largely duplicates of each other.

9. The State Board of Administration construes the term "Senior-reviews" as used in the law to mean such courses as those outlined in this manual in High School United States History, High School Arithmetic, High School Grammar, High School Civics, High School Geography, High School Writing and Spelling (one-half unit).

10. Laboratory note books are required in all Sciences. The laboratory work should cover the subject. The note book need not contain an account of each and every exercise. Note books should not be prepared for their own sake, but should represent efficient laboratory work.

11. Every high school library must be supplied with a few good newspapers and magazines. At least 30 minutes per week should be devoted in every high school to the treatment of current events.

12. High schools are urged to make all possible use of illustrative material, such as slides, moving picture films, charts, and photographs; and to provide themselves with the proper projection apparatus for their use.

V. THE JUNIOR HIGH SCHOOL

In the opinion of many leading educators the natural place for the change from the subjects and methods of the elementary school to those of the high school is at the end of the sixth year. Some subjects now commonly given in the high school are quite to the liking of children in the upper grades and well within their powers when properly taught. Among these subjects are Manual Training, Home Economics, Modern Foreign Language, Community Civics, etc. In order to save time and to avail themselves of the pupil's interest some schools are already using the Six-Six or the Six-Three-Three Plan. In order to meet the needs of the times the content of many of the courses should be changed. The following is suggested for the six-year high school in North Dakota. All major subjects should be pursued five periods per week.

CURRICULUM

7th Grade.

Required		Elective	
English	1	Manual Training	1
Mathematics	1	Domestic Science	1
Geography	1	Agriculture	1
History	1	Commercial	1
Music	$\frac{1}{2}$	Foreign Language	1
Physical Education	$\frac{1}{2}$		

8th Grade.

English	1	Manual Training	1
Mathematics	1	Domestic Science	1
General Science	1	Agriculture	1
Civics and Citizenship	$\frac{1}{2}$	Commercial	1
Physical Education	$\frac{1}{2}$	Foreign Language	1

9th Grade.

English	1	Music	1
Physical Education	$\frac{1}{4}$	Commercial	1
		Physiography	1 or $\frac{1}{2}$
		Physiology	$\frac{1}{2}$
		Foreign Language	1
		Mathematics	1
		Free Hand Drawing	$\frac{1}{2}$
		Home Economics	1
		Manual Training	1

Physical Education should include physiology, hygiene, physical examination and treatment, and use of the gymnasium and playground for correction and development.

In general, in this plan, the constants are expected to occupy three-fourths or nearly three-fourths of the time and energy of all pupils; therefore, one-fourth or more of the time and energy of the pupil will be given to the elective, vocational, subjects. Subjects should be divided as far as possible into six weeks unit—three such units occurring in each semester. This will make easier entrance periods for pupils obliged to enter late, due to farm work—and will make it easier to make up back work.

Vocational guidance should receive attention. The teachers in Junior High Schools should make a study of Vocational Guidance through the reading of books and magazines, etc.

The instruction in the seventh to twelfth grades, the Junior and Senior High Schools, should largely be departmental; but in the first to sixth grades it should be by grades, except probably music and possibly drawing and penmanship.

Community Civics is a course in which the pupils are taught what is done in the community and paid for from a common treasury, or treasuries; who does it; how he does it; by what authority and what he receives for doing it. It is not a text book course; but one into which the teacher puts initiative, energy and personality. Consult Course of Study for Common Schools.

Under the Junior High School plan credit should be given each subject in such a way as to get an aggregate of at least 15 units of regular high school work besides the complete work of the 7th and 8th grade subjects. Under the Six-Six Plan or the Six-Three-Three Plan it is entirely possible to meet any reasonable college entrance requirement or to have the pupil's course lead more directly along vocational lines.

By resolution the State Board of Administration is on record to the effect that in the Six-Six or the Six-Three-Three Plan High School teachers in Junior High Schools need not be college graduates or hold the first grade professional certificate unless they teach academic subjects usually contained in the four-year high school course when, of course, the certificate law would become operative. However, all teachers in Junior High School must hold some form of professional certificate.

VI. RULES FOR STATE EXAMINATIONS

The Board of Administration, through the Educational Commission shall conduct state examinations in any of the subjects of the eighth grade and high school as a part of the school inspection of any public school in the state. All rural, graded and graded consolidated schools shall be required to take the state examinations in the eighth grade and high school subjects. Third class high schools have the option of taking the state examinations if they make requisition for questions in advance. Private schools, that apply and are adjudged to maintain a standard equivalent to that of the state high schools, may also take state examinations in eighth grade and high school subjects.

The examinations will be given three times each year—the second week in February, the last week in May and the third week in June. This is done to accommodate those schools that open the latter part of September in order to give farm children a chance to complete a high school course. Sets of questions and necessary blanks shall be sent out usually by express to superintendents and principals a few days before the examinations are scheduled to begin. It is only in the one-half unit subjects that high school examinations will be offered at the close of the first semester.

The Educational Commission shall grade all papers on the following basis: passed, passed plus, or not passed. Passed plus is given to papers attaining a grade of 80 percent or over. Papers graded below 65 percent are marked not passed.

All questions in regard to State Board examinations and classification should be addressed to the Secretary of the Educational Commission, Bismarck, N. Dak.

VII. SYNOPSES OF SUBJECTS.

BIBLE STUDY

One-Half Unit.

Under a plan proposed by the State Sunday School Association and authorized by the Board of Administration, classes in Bible Study may be organized by any church or society and a maximum of one-half unit of credit toward graduation given for such work. The study may be conducted in classes, in clubs, or individually, the only requirement being that students must successfully pass a written examination to receive credit. When the work is conducted in classes or clubs it is recommended that two periods throughout the school year per week be devoted to the study. The course is outlined in a syllabus and the examinations are given at the time of the regular State High School Examinations.

ENGLISH.

The outstanding features of the English course are the separation of composition and literature, and the emphasis upon oral as well as written composition. For graduation the students must successfully complete the work of the first three years, each of which consists of one semester of composition and one of literature. Completion of the work of any semester entitles the student to one-half unit of credit. As many as four and one-half credits in English may be counted toward graduation.

The fact that the work of one semester is composition and that the other, literature, does not mean the entire separation of the two activities of reading and writing. It does mean a distinct difference in emphasis and aim. In the composition semester, however, students will read to find models; in the literature semester they will write and speak to express the ideas suggested by their reading.

In each semester, every student must do certain required outside reading.

First Year.

Semester 1.—Literature.

The work in literature consists of class study and collateral reading of narrative, in both prose and poetry; nature sketches; patriotic selections.

Semester 2.—Composition.

The work of this semester should stress consideration of the composition "as a whole." It should include practice in outlining, paragraphing, letter writing, and drill in punctuation, capitalization, spelling, use of the dictionary, simple parliamentary usages, "Better Speech." There should be constant practice in both oral and written composition, based chiefly upon current news and the students' own experiences.

Second Year.

Semester 1.—Composition.

The course should include the following: a review of the composition considered as a whole; the paragraph; the sentence; word study; letter writing; preparation of short themes of all four kinds of composition; description; narration, with emphasis upon news writing; the interview; the newspaper; current news through use of a magazine; further drill upon the mechanics of writing and speaking.

Semester 2.—Literature.

Selected classics of the following types are listed for class study and collateral reading: dramas novel, narrative poetry, speeches on American citizenship.

Third Year.

Semester 1.—Literature.

A study of the short story and the reading of selected speeches on American citizenship are required. In addition, selections from any three of the following groups are to be made: lyric poetry, long narrative poems, novels, dramas.

Semester 2.—Composition.

Oral composition should be the prominent feature of the course; exposition and argumentation, the forms specially studied. Topics for particular attention are the preparation of long themes; the use of library helps in gathering material; note-taking; outlining; briefing; delivery; study of current magazines; parliamentary practice; writing of letters of more difficult type than those previously attempted; precision in the use of words; sentence and paragraph structure; punctuation.

Fourth Year.

Semester 1.—Composition.

Either of the following courses may be offered:

1. A review course in composition, oral and written, including necessary review of grammar, drill on mechanics of speech and writing, continued study of current magazines, and the working out of projects involving review of the process of composition, and the kinds of composition.

2. A course in public speaking, with emphasis upon the preparation and delivery of debates, and speeches for special occasions. Parliamentary practice and the use of current magazines should be continued.

Semester 2.—Literature.

Either of the following courses may be offered:

1. A course in reading from American literature, with some attention to historical background.

2. A similar course in English literature.

Note. Where there are students enough to warrant doing so, both of these courses may be offered, one in each semester.

Syllabus.

The course in English has been outlined in greater detail in a syllabus which may be secured from the Board of Administration, Bismarck, North Dakota.

FRENCH I.

One Unit.

The thing of chief importance in the first year of the teaching of French is to lay all possible stress on the fundamentals. Because many French words resemble English words in appearance (which are usually not equivalent) and because the word order is partially similar there is a deceptive easiness about the study that leads to carelessness on the part of both teacher and pupil. This results in many misunderstandings and a basis knowledge is often not secured. Clarity and precision are two of the chief characteristics of the language and if it is not studied with full appreciation of this both the practical and the cultural values suffer.

The objects to strive for in the first year are: (1) an unobjectionable pronunciation; (2) a thorough knowledge of the forms of the language, including twenty-five of the commonest verbs; (3) a knowledge of the general elementary points of syntax; (4) the thorough mastery of about 1500 words of vocabulary and common idioms; (5) the ability to translate at sight simple French of the grade found in the average reader; (6) the ability to comprehend short questions in French and form short answers to them.

The basis of all successful work is the pronunciation and adequate time should be devoted to outlining it clearly, describing how the sounds are formed as well as pronouncing them for imitation. The beginning book should be one that uses some form of phonetic transcription, preferably that of the International Phonetic Association—such a book as either of those by Fraser and Squair (D. C. Heath) or Thieme and Effinger (MacMillan). If the teacher feels able to attempt the modern Reform Method now widely used abroad a choice may be made of the Walter Ballard (Scribners). This is especially good in small classes. All new words must be carefully pronounced by the teacher and care taken to see that the pupil gets a correct notion of the sounds the first time. Do not be afraid to correct unceasingly. Make frequent use of dictation exercises, using the lessons as a basis. Drill carefully on the verbs, saving time by using a verb blank (one can be secured from the University Book Store, University, N. Dak.) Be practical and translate early, questioning as far as possible in French, using the text as a basis. Correct carefully all exercises and insist on corrected work being re-written. Memorize the Marseillaise (two or three stanzas) and sing it in class. Use the reading material to suggest as far as possible facts in French history, life, commerce, industry, etc. A reader such as Talbot: *Le Francais et sa Patrie* (Sanborn) is of great help in this work. The "Conversational Method" should be employed largely.

FRENCH II.

One Unit.

If any French is taken, two years should be taken. If the language is started in the lower years of the Junior High School, the later work should be harmonized with this.

Review the fundamental features of the first year, using some such

book as *Trois Semaines en France* (Oxford University Press, New York). This exercise should come once a week through the year. It may be supplemented by composition work based on the text. Re-emphasize constantly the pronunciation. The reading should be copious and fairly easy, although an increase in difficulty over that of the first year. Such texts as Merimee's *Colomba*, Brunot's *Le Tour de France*, Malot's *Sans Famille*, About's *La Mere de la Marquise*, Halevy's *L' Abbe Constantin*, Labiche, *Le Voyage de M. Perrichon* may be chosen and toward the end of the year an excellent choice is Maupassant, *Huit Contes Choisis* (D. C. Heath). In Heath's catalogue will be found an excellent graded list of texts of different degrees of advancement. Memorization of short French poems such as Nadaud's *Carcassonne*, Hugo's *Le Tombe a la Rose*, etc. Note: Schools offering French should have the following equipment: (1) International Pronouncing French Dictionary (Hinds, Noble and Eldridge); *La Petit Larousse Illustre* (G. E. Stechert, New York); (3) Map of Europe (Rand-McNally's, Chicago); (4) A Map of France, (St. Paul Book and Stationery Co., St. Paul); a Plan of Paris, *Nouveau Paris Monumental et Environs de Paris*, (Paris, Darnier Freres, No. 6, Rue Des Saints Peres); Dowden's *History of French Literature* (Appletons); Adams, *A Short History of the French People*; Taine, *The Origin of Contemporary France*.

Teachers may well add to their personal library the following: Report of the Committee of Twelve, (D. C. Heath); Karl Breul, *The Teaching of Modern Foreign Languages*, (G. E. Stechert, New York). Regular reading and investigation should have a definite part in the work of every teacher. The standard of modern language teaching is steadily improving.

FRENCH III.

One Unit.

The books to be read may be chosen from among the following works—Augier, *Le Gendre de M. Poirier*; Balzac, *Le Cure de Tours*; Daudet, *Contes*; Daudet, *La Belle Nivernaise*; Anatole France, *Le Livre de Mon Ami*; Sand, *La Mare au Diable*; Hugo, *Les Miserables*; Dumas, *La Tulipe Noire*; Moliere, *Les Precieuses Ridicules*. The grammar review should be systematic and of a stage beyond that of *Trois Semaines en France*, mentioned in French II. Such a book as *Francois, Elementary French Composition* (American Book Company) will serve admirably; for the teacher who prefers and is able to make this side of the work oral, Ballard, *Short Stories for Oral French* (Charles Scribners' Sons) will prove satisfactory. French songs (cf. 'selection by Ballard, Scribners) should be used if possible. The school should also keep on hand a large number of easy French texts of an interesting nature (cf. the graded list in the catalogue of D. C. Heath and Co.) to lend out to pupils for their personal entertainment; pupils should be encouraged to do much outside reading of this sort. The third year should see the principles of grammar firmly fixed, the vocabulary much enlarged, the store of idioms increased and a greater appreciation and understanding of French life and culture attained.

GERMAN I.

One Unit.

The 'Conversational Method' should be used largely. It is the only logical and practical method to pursue. The first few weeks of the study of German are critical, for during this time the basis is laid for either a good or faulty pronunciation. Every effort must be made, from the very beginning, that the student may acquire a perfect manner of speaking. Drill must be the slogan—ceaseless and untiring drill, individual and in concert. Explain the physiology of sound production. This will help in the acquisition of a correct *Sprachlage*. Use phonetic transcription to keep the pupil's and the teacher's pronunciation up to grade. Assign pupils no home study without having previously prepared the work thoroughly in the class. Insist that the vocabulary be mastered each day. Insist that the points in the grammar are understood and that the principles can be applied, not only in the parrot-like repetition of paradigms but in complete sentences—in other words, teach *lebendige Grammatik*. Use dictation exercises, lasting, at the utmost, ten minutes, at least once a week. Sing German songs. Teach pupils to read the German script, even if they are not required to write it. It is a part of their linguistic equipment. See to it that readers and grammar are thoroughly modern and up-to-date. Memorize: Tannenbaum; Heine's *Du bist wie eine Blume*, and *Die Lorelei*; Goethe's *Das Heidenroeslein*. Master the essentials of grammar and read either Storm's *Imensee* or Hillern's *Hoeher als die Kirche*, both in the Walter-Krause German Series, published by Scribners. Make German the main medium of expression in the class room. Remember the words of Goethe: *Das Was Bedenke, Mehr Bedenke Wie*.

GERMAN II.

One Unit.

Review grammar thoroughly. Read much aloud. Let no faulty pronunciation pass uncensored. Remember that here, as in many other things, the spirit may be willing and the flesh weak. Have oral reproduction of short anecdotes and short stories. Memorize: Eichendorff's *Das zerbrochene Ringlein*; Goethe's *Der Erlkoenig*; Uhland's *Das Schlosz am Meer*. Sing German songs. The following stories are edited by Scribners, in the Walter-Krause German Series, are recommended: Seidel's *Leberecht Huehnchen*; Wildenbruch's *Das edle Blut*; Arnold's *Fritz auf Ferien*; Storm's *Pole Poppenspaeler*. Each one of these texts contains questions, and suggestions for short compositions. These should be carefully worked out. The review of the language part of the study, so essential to a thorough knowledge of the subject, is thus carried on systematically.

NORSE I AND II.

These courses are to be equivalent to the courses in German I and II or French I and II in the amount of work required, in the credit allowed, and in their demand upon the effort of the pupil.

For details regarding the contest of these courses apply to the Department of Scandinavian Languages of the University of North Dakota. The post office address is University, N. Dak.

SPANISH I.

One Unit.

The necessity for learning Spanish in our school is self evident and can hardly be overemphasized. First of all our commercial relations with Cuba, the Philippines, Mexico and the South American republics must be kept up and our opportunities greatly developed. To be able to keep a decided advantage in trade over competitive nations, we must first of all use Spanish with ease as a medium of expression. To be successful we must be familiar to some extent not only with the economic and commercial needs and resources of the Spanish speaking countries, but also with their social life. Aside from its practical value Spanish has great cultural value. Spanish civilization, literature and history are intensely interesting; a thorough study of Spanish with its Latin origin cannot but be of great assistance in the teaching of the English vocabulary and etymology.

Students and teachers of Spanish alike must be cautioned against the fallacy of regarding Spanish as easy. In spite of its apparent facility, a thorough acquisition of Spanish requires as much attention and industry as any other language. Undoubtedly if the Spanish pronunciation is compared to French pronunciation the former is decisively easier; yet in the course of study students find an abundant vocabulary, idiomatic expressions, idiomatic construction, great flexibility of sentence structure, a great variety in the use of the subjunctive mode, all of which are difficult to master.

The aims of the first year are: (1) a correct pronunciation; (2) a mastery of the essentials of the language including the most common irregular verbs; (3) an acquisition of idiomatic expressions and of a fairly good sized vocabulary; (4) the ability to understand short easy questions and answer them in Spanish; (5) the reading of from 75 to 100 pages of graded prose.

The direct or conversational method ought to be used largely.

In teaching Spanish pronunciation the following suggestions should be borne in mind: Go slowly; explain sounds clearly, and carefully; make use of practical phonetics, because it is more scientific, and it saves time; insist on an exact reproduction of the sounds and on clear enunciation and articulation on the part of the students; correct and repeat unceasingly; drill especially upon sounds that differ from the English. The reader should be written in simple Spanish (difficult literary material should be avoided) and deal chiefly with facts concerning Spanish life, history, commerce, industry, etc. Read aloud frequently; the teacher first, an individual student next, and finally the entire class together.

Ask numerous questions on the text read and insist on answers given in correct Spanish. Drill carefully and unsparingly on verbs, and also call attention to idioms. Memorize short Spanish poems and songs. Dictate exercises taken at first from material already studied or read and later on from material that has not been seen. Use Spanish as much as possible. Do your utmost to create a Spanish atmosphere and a feeling for the language. Wall maps of Spain, Mexico and South America, pictures representing Spanish scenes of every day life, cities and great men, should adorn the class room. The following books ought also to be provided for reference: A Spanish dictionary, histories of Spain and South America, a History of Spanish literature.

During the past few years a great many excellent Spanish grammars and readers have been put on the market.

Grammars:

Hills and Ford: First Spanish Book, D. C. Heath and Co.

Espinosa and Allen: Elementary Spanish Grammar, American Book Co.

Coester: Spanish Grammar, Ginn & Co.

De Vitis: Spanish Grammar for Beginners, Allyn & Bacon.

Olmsted and Gordon: Abridged Spanish Grammar, Holt & Co.

Fuentes and Francois: A Practical Spanish Grammar, Macmillan Co.

Crawford: First Book in Spanish, Macmillan Co.

Moreno-Lacalle: Elementos de Español, Sanborn & Co.

Readers:

Espinosa: Elementary Spanish Reader, Sanborn & Co.

Harrison: Elementary Spanish Reader, Ginn & Co.

Fuentes and Francois: A Trip to Latin America, Holt & Co.

Berge-Soler and Hathaway: Elementary Spanish-American Reader, Sanborn & Co.

De Vitis: Spanish Reader, Allyn & Bacon.

Teachers and prospective teachers of Spanish should by all means procure a copy of Wilkins: Spanish in the High Schools—A Handbook of Methods (Sanborn & Co.) Aside from giving practical suggestions concerning the curious problems of teaching Spanish, it also gives an outline of a course of study for the Junior High School and an invaluable bibliography and other aids.

SPANISH II.

One Unit

Review the essentials of the Spanish grammar taught in the first year. Give especial attention to radical-changing, orthographical-changing, irregular verbs, the use of the subjunctive mode and personal pronouns. Allow no faulty careless pronunciation to pass uncorrected. Read aloud frequently and do a great deal of questioning in Spanish. Give short dictation exercises at least once a week. Read from 175 to 200 pages of graded prose. Allow no slipshod translation and insist on pure idiomatic English. One text at least should deal with Spanish life, customs, and ideals. Have composition work once a week. Memorize from 50 to 75 lines of prose or poetry.

Selections may be made from such texts.

Reading:

Wilkins and Lauria: *Lecturas Faciles*, Silver, Burdette & Co.

Supple: Spanish reader of South American History, Macmillan Co.

Bardin: *Leyendas Historicas Mejicanas*, Macmillan Co.

Luquiens: *Elementary Spanish-American Reader*, Macmillan Co.

Hills: *Spanish Tales for Beginners*, Holt & Co.

De Haan & Morrison: *Cuentos Modernos*, Heath & Co.

Alarcon: *Novelas Cortas Escogidas*, Heath & Co.

Alarcon: *Novelas Cortas*, Ginn & Co.

Alarcon: *El Capitan Veneo*, Heath & Co., or American Book Co.

Escrich: *Fortuna*, Ginn & Co.

Morrison: *Tres Comedias Modernas*, Holt & Co.

Harrison: *A Spanish Commercial Reader*, Ginn & Co.

Composition:

Umphrey: *Spanish Prose Composition*. American Book Co.

Wilkins: *Elementary Spanish Prose Book*, Sanborn & Co.

Crawford: *Spanish Composition*, Holt & Co.

Waxman: *A Trip to South America*, Heath & Co.

Whittem and Andrade: *Spanish Commercial Correspondence*, Heath & Co.

FOREWORD

Latin during recent years has come to be recognized as a most valuable and practical subject for high school study. Leading educators have most heartily endorsed it, and the Conference on Classical Studies in Liberal Education held at Princeton in June, 1917, shows what the opinions of many important educational leaders are on this subject. This fact should be a stimulus to greater effort on the part of Latin teachers everywhere, and should arouse them to a realization of the possibilities of teaching this subject to make it practical and worth while in this age of demand for efficiency.

LATIN I.

One Unit.

It is of the utmost importance that the Latin of the first year be thoroughly mastered, for upon this work alone hinges the success or failure of all later study of Latin. Since more than one-half of all the words in the English language are of Latin origin, no opportunity to mention English derivatives in every new vocabulary lesson should be neglected. All Latin students should keep a note-book for listing English words of Latin derivation. This practice should begin early in the first year and continue throughout the course, with special emphasis, however, during the first two years. Word analysis of this sort will prove particularly valuable in building up an extensive vocabulary in English, and forms one of the principal reasons for justifying the importance of Latin in the curriculum of high school subjects.

The Roman method of pronunciation should be used, and proper observance of quantity of vowels and syllables should be insisted upon in all oral work. A student who can not appreciate the dignity and earnest-

ness of the Roman character as it is expressed in oral Latin, loses an important element in the study of that language. No sentence should be translated without first being read aloud, with proper attention given to intelligent expression and correct phrasing. In written work, all long vowels should be marked. This need not be a burden if attention is called to all long vowels in new words when they are first presented, and if correct sounds of vowels are always observed. There should be frequent exercises in oral composition based upon familiar words and constructions. If skillfully managed, a certain amount of conversational Latin may be introduced to arouse interest and give additional practice in translation. Imitation and accustoming the ear to nice discriminations of sound and quantity are important factors in teaching correct pronunciation. The teacher may accomplish much in this direction by occasionally reading aloud certain Latin paragraphs, demonstrating what the ideal in oral Latin should be.

As the primary aim in Latin study is to acquire the ability to translate the classics into good English, pupils should be held to the use of clear, idiomatic expressions in all translations from the very first. Slipshod sentences and careless bungling of words, sometimes called "translation English" cannot be too strongly condemned. If right habits of translation are begun early, the student will acquire a mastery of English which will be of incalculable value to him in all his other work.

If thoroughness is to be the watchword in beginning Latin, then there must be frequent drills in declension of nouns, pronouns, and adjectives; conjugation of verbs; and comparison of adjectives and adverbs. Practice in translating many supplementary exercises into Latin, together with frequent opportunity for sight reading under the teacher's guidance, will enable students to acquire a readiness in translation and feeling of mastery over the language that can be obtained in no other way.

Students who have been carefully trained in their first year's work, will be enthusiastic members of Caesar classes, and it is then that the Latin teacher will appreciate the full significance of what mastery of the fundamentals of the beginner's book means.

The following outline gives the important factors to be emphasized in the work of the first year:

I. Pronunciation.

1. Sounds of vowels, diphthongs and consonants.
2. Quantity of vowels.
3. Quantity of syllables.
4. Accent.
 - (a) Of penult.
 - (b) Of Antepenult.
 - (c) When enclitic is added.

II. Nouns.

1. Case endings for each of the five declensions.
2. Rules for gender for each declension.
3. Base of each noun.
4. Rules for "i" stem nouns of the third declension.

III. Pronouns.

1. Declension of

- (a) Demonstrative.
- (b) Personal.
- (c) Interrogative.
- (d) Relative.
- (e) Indefinite.
- (f) Intensive.
- (g) Reflexive.
- (h) Possessive.

2. Use of each kind of pronoun.

IV. Adjectives.

1. Declension.

(a) First and Second.

- (1) Bonus.
- (2) Liber.
- (3) Pulcher.

(b) Third.

- (1) One termination.
- (2) Two terminations.
- (3) Three terminations.

(c) Nine irregular adjectives.

2. Comparison of

- (a) Regular adjectives.
- (b) Adjectives ending in *er*.
- (c) Adjectives ending in *lis*.
- (d) Irregular adjectives, as *bonus*.
- (e) With *magis* and *maxime*.
- (f) Defective adjectives, as *interior*.

V. Adverbs.

1. Formation from adjectives.

- (a) Of first and second declensions.
- (b) Of third declension.

2. Comparison.

- (a) Regular.
- (b) Common irregular adverbs.

VI. Verbs.

- 1. Four regular conjugations, including "i" stem verbs of the third conjugation.
- 2. Irregular verbs: *possum*, *volo*, *nolo*, *malo*, *eo*, *fero*, *fi*, and compounds.
- 3. Stems for each conjugations.
- 4. Principal parts.
- 5. Tense signs.
- 6. Personal endings.
- 7. Mood signs.
- 8. Deponent verbs.

VII. Prepositions.

1. With accusative.
2. With ablative.

VIII. Numerals.

1. Cardinals to 20; also 100, 200, 1000, 2000.
 - (a) Use of Cardinals.
2. Ordinals to 20.

IX. Syntax.

1. Nominative.
 - (a) Subject of finite verb.
 - (b) Appositive.
2. Genitive.
 - (a) Descriptive, or limiting.
 - (b) Partitive.
 - (c) With verbs of remembering and forgetting.
3. Dative.
 - (a) Indirect object.
 - (b) Purpose or service.
 - (c) With adjectives.
 - (d) With special verbs.
 - (e) With verb compound.
4. Accusative.
 - (a) Direct object.
 - (b) Subject in indirect discourse.
 - (c) Duration and extent.
 - (d) Place to which.
5. Ablative.
 - (a) Means.
 - (b) Cause.
 - (c) Manner.
 - (d) Specification.
 - (e) Place where, from etc.
 - (f) Time when or within which.
 - (g) Separation.
 - (h) Personal agent.
 - (i) Accompaniment.
 - (j) After comparatives without quam.
 - (k) With deponents.
 - (l) Ablative absolute.
 - (m) Measure of difference.
 - (n) Descriptive.
6. Vocative.
7. Locative.
8. Subjunctive mood.
 - (a) Purpose.
 - (b) Result.
 - (c) Indirect questions.
 - (d) Characteristic.
 - (e) Cum causal, concessive, temporal.

9. Tense sequence.
10. Gerund and gerundive.
11. Use of present imperative.
12. Indirect discourse. (Simpler forms).

X. Word order in a Latin sentence.

CAESAR.

One Unit.

When the transition from beginning Latin to Caesar is too abrupt the mortality is proportionately high. It will be time saved to spend from two to four weeks in thorough review of the principles of the first year's book before undertaking the real work of the year. In connection with this review, some composition work and sight translation from easier prose, such as *Fabulae Faciles*, will be valuable. At first there should be much guidance on the part of the teacher so that pupils may form correct habits in translation and learn how to go about the analysis of a new, and oftentimes a long sentence in Caesar.

For the well prepared class, Books I to IV of Caesar's *Commentaries* can easily be read without substitution. However, portions of Books V, VI, and VII or selections from *Viri Romae* and *Nepos* may be substituted in part, if desired. Composition equivalent to one period a week should be kept up throughout the year. If possible this work should be based upon the text read and should be accompanied by a systematic review of grammatical principles, and a special study by systematic review of grammatical principles, and a special study of the constructions most commonly found in Caesar. Classes are much more likely to keep up interest in composition if a definite amount of oral work is assigned each day, with occasional written lessons on longer sentences. All idioms should be memorized and principal parts of verbs learned as they occur. The grammatical drill of the first year should be continued to fit the needs of the class.

Although the student should understand the grammatical structure of what he translates, yet it is a mistake to over-emphasize this matter and destroy all interest in the story for its own sake. If the work is properly managed it ought not to be necessary to make Caesar a lesson in grammatical drill every day. At first the more common constructions should be studied in detail, and later those of less frequent occurrence may be taken up as they appear in successive lessons.

Students should never be excused for lack of knowledge of vocabulary in lessons that have been assigned, even if they cannot always translate correctly. The lesson of the previous day should always be read as a review, and nothing but fluent, idiomatic English should be accepted. No assistance should ever be given in a review lesson in class. Teachers should be definite in their assignments each day and then hold students strictly accountable for the entire lesson.

Be sure that, in addition to acquiring ability in translation, students are following the thought of the text. Too often pupils who have read Caesar have only a vague notion of what it is all about. The maps should be diligently studied, campaigns closely followed and explained by means

of charts and diagrams, and a study of the military system of Caesar's day carried out. After completing the study of each campaign, students should be asked to give a detailed account of it using maps, etc. Reports on such topics as the plan of a Roman camp (explained with diagrams), the organization of the Roman army, the Roman art of war, and others pertaining to the time of Caesar are strongly recommended. The construction of a model bridge when Book IV is studied is worth the time and effort it may require. The life of Caesar in connection with the political conditions of his time should receive some attention also.

Besides continuing the practice of listing words of Latin derivation, students may be encouraged to notice all instances of Latin words and phrases used in everyday English, in state mottoes, on coins, in newspaper and magazine articles and advertisements, in scientific textbooks, and from this material make interesting and attractive notebooks.

By the time classes have completed the second year's work in Latin they should have a thorough knowledge of the subject matter read, of the more common constructions of nouns, pronouns, and verbs, a vocabulary including virtually all of the words and idioms used during the year, and should have developed an ability to translate Latin prose of moderate difficulty with ease.

CICERO.

One Unit.

The work of the third year should include a study of the four orations against Catiline, the one on the Manilian law, and the one for the poet Archias. Sallust's Catiline and selections from Cicero's letters, however, may be used as part substitution. The study of the life and personality of Cicero, of Roman political conditions of his time, and of the structure of an oration should receive particular attention. Composition equivalent to one period a week should be continued throughout the year. The same suggestions for the composition in Caesar may apply in this course. The more complex constructions of verbs and verb-forms, and those common to Cicero should be considered at this time. The memorizing of idioms and principal parts of new verbs should not be neglected.

Pupils who have a mastery of the principles of the first year's work and who have read Caesar ought to be ready to pay more attention to style and less to mechanics of translation. Cicero affords an excellent opportunity for word study and clear expression of thought. The class should be led to weigh the values of words, to distinguish fine shades of difference in meaning, and to be satisfied only when they have found just the right English to convey the thought of the Latin. Written lessons on certain portions of an oration may be assigned occasionally as a test of the pupil's ability to get the thought from the original text, and to express it in idiomatic English. Wide-awake, alert students often develop a wholesome spirit of rivalry in their attempts to outdo their classmates in work of this kind.

After an oration has been translated the first time it should be reviewed and considered as a whole. If the teacher will then read the

entire oration to the class, and this can easily be done in about forty-five minutes, pupils will be better able to realize that the actual address did not take so long a time for delivery, as the first piecemeal translation would indicate. When the thought of each oration and the conditions which prompted its delivery are fully comprehended, the class can not fail to be interested.

Study of the private life of the Romans, and of the Roman forum, with pictures, oral reports and discussions, add much to the value of a course in Cicero. By this time, the Latin notebooks may be varied by the introduction of exercises of this type. Clippings from magazines and newspapers or other reading material chosen at random may be pasted in the notebooks, with the words of Latin derivation underlined, and the percentage of such words indicated at the bottom of the clipping. Collections of words of Latin origin found in certain chapters of other textbooks which pupils are using will show how much Latin helps in the understanding of the other subjects. References to Roman mythology are often seen in modern cartoons, and a collection of such cartoons would be interesting. Collections of any kind that show how Latin words and Roman myths form a part of modern life and expression should be the aim in the notebook work of this year.

VERGIL.

One Unit.

This course should comprise a translation of the first six books of the Aeneid, with considerable attention given to reading the poem aloud metrically, to a comprehensive study of Roman mythology, and the rhetorical figures commonly found in Vergil. The metrical reading will be comparatively easy after the meter is understood, if pupils have been trained to observe the quantity of all syllables in their preliminary work. A study of grammatical principles should accompany the regular work with special reference to the constructions peculiar to Vergil's style. These should include: (1) Purpose. (2) Place relations. (3) Greek accusatives. (4) Dative of reference and Ethical Dative. (5) Middle Voice. (6) Patronymics. (7) Final syllables. Students should notice examples of personification, hendiadys, onomatopoeia, and other figures of speech.

Approximately one period a week should be devoted to composition. The work of this year should include a thorough review of all grammatical principles of the first three years and composition exercises based upon this review.

Certain passages from the Aeneid should be assigned occasionally for metrical translation into English, and some of the best portions of the poem should be memorized from time to time. If the work up to this time has been satisfactorily completed, students should be able to read intelligently and with expression and should do considerable sight reading of selections from Horace and Ovid, or of other works by Vergil.

The subject matter of the poem must be comprehended as it is read. After each book has been translated a synopsis should be required of each pupil, together with a map locating the different places

through which Aeneas passed on his way to Italy. It should not be said that students who have read the Aeneid know nothing of the connected story running through the poem.

The life of Vergil, his rank among Roman writers, and the influence of the Aeneid on English literature should receive attention. This year's work above all others should cause students to have the deepest respect and admiration for the Latin language and its literature, and make them feel amply repaid for the time and effort expended in acquiring the ability to read and appreciate this great poem in the original.

GENERAL SUGGESTIONS TO TEACHERS

Since so much of the success in Latin study depends upon a right start, there can be no danger of overemphasis of this matter. Pupils like subjects which they can fully comprehend, and over which they feel a certain degree of mastery. Only by diligent and consistent effort on the part of the pupil and untiring zeal on the part of the teacher can excellent Latin students be produced. In order to have wide-awake, interested classes, the teacher must be enthusiastic about Latin, and this enthusiasm will inevitably react favorably upon the pupils.

The assignment of a Latin lesson, especially in the first year, is a very important part of the work. Carelessly assigned work often accounts for poor recitations the next day. Any new material that is likely to cause difficulty in an advanced lesson should be mentioned and explained enough to enable pupils to prepare their lessons intelligently. Then no half-prepared lessons need be accepted.

In all composition lessons that are written, errors should never be corrected by the teacher, but the words that are wrong should be underscored, or some comment made to lead pupils to discover their own mistakes, and correct them. All poor work should be rewritten and corrected. It is a splendid exercise for the entire class to exchange papers and criticise one another's work. More Latin can be learned in a period in this way than in any other. Sometimes it is a good plan to send pupils to the board to write their composition without note or papers, using only English sentences as a basis. The criticism of this board work should come entirely from the class, unless the error fails to be noticed by any pupil. All this criticism should be in the form of questions addressed to the person who wrote the sentence. These questions should be such as to provoke thought as "What thought is expressed by . . .?" "What is the case of an indirect object?" Not "That word should be in the dative case because it is an indirect object." If composition is managed in this way throughout the entire course, from the first simple sentences of the beginning work, there will be no dreaded composition days because pupils are not interested.

Good English should always be insisted upon in all translations from Latin. It is often surprising to find what good results may be obtained from a so-called poor class, if nothing but the best will be accepted from those in the class. An opportunity to connect the English with Latin derivatives should never be missed.

Nothing aside from the enthusiasm and personality of the teacher can create more interest in this work than to have a room or corner of a room fitted up as a Latin laboratory, suitably equipped with pictures, mottoes, books, etc., suggestive of Latin. This room may be a corner of the regular class room where students may come to work from time to time on their notebooks, and compare and exchange ideas with their classmates. Miss Sabin's manual, mentioned in the bibliography, will

give much help in work of this kind and in preparing a Latin exhibit. Teachers who have never tried to connect Latin with modern life will not realize what possibilities there are in this correlation, until they have tried it. The experiment is decidedly worth while.

BIBLIOGRAPHY

Mythology.

Fairbanks. *Mythology of Greece and Rome*. Appleton. New and very good.

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Guerber. *Myths of Greece and Rome*. American Book Co.

Caesar.

Fowler. *Life of Julius Caesar*. G. P. Putman's Sons.

Judson. *Caesar's Army*. Ginn & Co.

Second Year Latin. Scott, Foresman and Company. Furnished gratis on request. Every teacher of Caesar should read this pamphlet.

Cicero.

Abbott, F. F. *Roman Political Institutions*. Ginn & Co.

Ancient Rome. Houghton-Mifflin Co.

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Shumway. *A Day in Ancient Rome*. D. C. Heath & Co.

Strachan. *Davidson's Cicero*. G. P. Putman's Sons. Very helpful.

Vergil.

Glover. *Studies in Vergil*. Edward Arnold. Helpful and suggestive.

Sellar. *Vergil*. Oxford Press. Best literary criticism.

Dictionaries.

Harper's Latin Dictionary. American Book Co.

White. *English-Latin Dictionary*. Ginn & Co.

Miscellaneous.

Brown. *Latin Songs With Music*. G. P. Putman's Sons.

Byrne, Lee. *Syntax of High School Latin*. University of Chicago Press.

Harper. *Dictionary of Classical Literature and Antiquities*; edited by H. T. Peck. American Book Co.

Hale. *Art of Reading Latin*. Ginn & Co.

Kelsey. *Latin and Greek in American Education*. Macmillan Co.

Lodge, Gonzales. *Vocabulary of High School Latin*. Columbia University, New York.

Paxon. *Two Latin Plays*. D. C. Heath & Co.

- Paxon. Handbook for Latin Clubs. D. C. Heath & Co.
Peck. Roman Pronunciation of Latin. Henry Holt & Co.
Sanborn, J. E. A Companion to Latin Studies. Cambridge University Press.
Schlicher. Latin Plays. Ginn & Co.
Special Helps for Teachers.
Card Games, published by the Latin Games Co., Appleton, Wisconsin.
Good.

The Relation of Latin to Practical Life. Francis E. Sabin. 419 Sterling Place, Madison, Wisconsin. This manual will prove a real help to progressive teachers who want to make their Latin classes alive with interest.

Value of the Classics. Princeton University Press. An inspiration to those interested in Latin.

Every teacher of Latin should be a member of the Classical Association of the Middle West and South. Yearly payment of \$2.00 to Prof. Louis E. Lord, Oberlin College, Oberlin, Ohio, entitles one to membership in this association and brings monthly the Classical Journal, the official paper of this association. Forty cents additional pays for a yearly subscription to Classical Philology, a monthly publication, more technical than the former. The Classical Weekly may be obtained by sending \$2.00 to Prof. Charles Knapp, Barnard College, New York City.

No teacher should be without several Latin grammars, commonly referred to in the notes of Latin texts.

PLANE GEOMETRY.

One Unit.

As presented in the ordinary text books.

Care should be taken that the pupil gains not merely a superficial readiness in using the form of geometric proof, but also an insight into the underlying principles of the subject which will enable him to apply his knowledge rightly.

Varied examples involving numerical computation should be given and occasional brief practice in drawing to scale will perhaps be found helpful.

Effort should be made through abundant work in original exercises and otherwise to develop in the pupil a prompt and independent facility in geometrical reasoning and proof, in constructions and in computation of problems involving mensuration.

SOLID GEOMETRY:

One-half Unit.

As far as possible the work in solid geometry should be related to plane geometry. The key to much of the work in solid geometry is the ability to visualize properly the solid figures. Concrete models should be used to make clear to the class the figures given in the text. Models made from pasteboard and splints or knitting needles are of decided service in making correct concepts of solid figures. There are geometric solids on the market that can be used with decided advantage in enabling

students to get the correct notions in regard to geometrical figures. As in plane geometry much work should be done in original theorems, problems and exercises.

Solid geometry has a history that is fascinating and the students should get some of this history in their course.

In the study of solid geometry the students should be taught constantly to see the relations of the principles learned to their practical applications.

TRIGONOMETRY.

One-half Unit.

The subject of plane trigonometry is comparatively easy and should be interesting to most students. It offers a good field for training the student in accuracy and exactness. It utilizes the facts of algebra and geometry and extends the field of vision of the student greatly. Emphasis should be laid on all parts of the subject which are applicable to practical problems. The following topics are offered as deserving of exhaustive treatment: the fundamental trigonometric functions with their inter-relationships, the solution of right triangles, the laws of sines, cosines, and tangents in the solution of oblique triangles, circular measure, the functions of double angles, the functions of the sum and difference of angles, inverse functions, trigonometric equations.

Let the students have thorough drill in solving a great many practical problems.

CORRELATED MATHEMATICS.

Three Units.

The movement in the direction of correlated mathematics is recognized quite generally as a movement in the right direction. The work in correlated mathematics as given in available texts may not be entirely satisfactory. Quite generally, too, the teachers find it difficult to break away from their traditional notions of teaching mathematics. The Wentworth-Smith-Brown and Breslich texts present better thought out schemes than any that can be worked out by a teacher of a few year's experience. The Breslich series of texts provides material for three year's work, beginning with the ninth grade, and covering the same ground as elementary and higher algebra, plane and solid geometry and trigonometry. One-half year is saved and the students have the advantage of studying and using all the subjects through the entire three years.

In teaching correlated mathematics the teacher should be cautious about presenting more difficulties from algebra and geometry than are planned. The authors of the texts intended to simplify the work in mathematics and to clear away some accumulation of mathematical rubbish. The teacher should not attempt to teach difficulties in mathematics that are not contemplated in texts used.

ELEMENTARY ALGEBRA.

One Unit.

At the beginning there should be a short treatment of this subject in such a manner as to make its relation to arithmetic as close as poss-

ible. Throughout the course it should be shown that the definitions and principles of arithmetic with some extension of meaning hold true in algebra. At the outset the pupil should learn that in algebra he is dealing chiefly with number and that each letter or combination of letters (algebraic expression) represents a number. The first problems should be such as may be solved as an exercise in either arithmetic or algebra and should be solved both ways. Problems that may be solved by the use of linear, or simpler equations, should be placed early in the course.

After the above preliminaries are completed, the following topics should be treated, the order in which many of them are taken up not being important: Positive and negative numbers; axioms; addition; subtraction; signs of aggregation; multiplication; division; special products; factors; highest common factor; lowest common multiple; fractions in algebra; fractional equations; simultaneous equations of two and three unknown numbers; involution; evolution; the simpler work in negative, radical equations; graphic solutions; pure quadratics; the simpler work in affected quadratics—solutions by completing the square and by factoring; problems in simultaneous quadratics—two unknowns; the simpler work in ratio and proportion.

The following topics are not included in this course: Highest common factor by continued division; simultaneous equations involving four or more unknown numbers; indeterminate equations; inequalities; the factor theorem; the more involved work in radicals, quadratics, and ratio and proportion; the theory of exponents; imaginary numbers; equations in the quadratic form; theory of the quadratic equation; cube root.

ADVANCED ALGEBRA.

One-half Unit.

This course includes the following topics: General principles of the fundamental processes; signs of aggregation; equations; factoring; the factor theorem; highest common factor, including the process by continued division; algebraic fractions; simultaneous equations; graphs; cube root; inequalities; indeterminate equations; theory of exponents; radical equations; imaginary numbers; quadratics; ratio, proportion and variation; series; binomial theorem; logarithms.

GENERAL HISTORY.

This course is designed to take the place of what has been known as Ancient and Modern History. It is therefore a two-year course, the first year of which is known as General History I and is designed to extend to the time of Louis XV, or thereabout. General History II should begin with Louis XIV, or thereabout and extend to the present time in European affairs. This course if thoroughly covered should made unnecessary another one-half unit of work in English History. There would seem to be some advantage in this arrangement so far as the high school program is concerned. It should be possible to give a student two and one-half years of history including Advanced U. S. History and still leave time

for a well-rounded course. The present tendency seems to be to give Ancient History and then allow the majority of students to take Advanced U. S. History because it is required. Relatively few schools are teaching English History. Such an arrangement leaves the modern part of European history a closed book and yet we profess to educate for citizenship and expect our young people to understand the great world movements. It would seem an economy of time as well as a means of giving more students a better knowledge of the development of the race to make a two-year course in General History compulsory for a large number of students. With such an idea in mind the following outline is presented. In favor of such a plan we find the bulletin of the Department of Education of N. J., Committee Reports of the North Central Association, and the Bulletins from the U. S. Bureau of Education.

GENERAL HISTORY I.

One Unit.

The object of the course should be to study past conditions and to give the student a working knowledge of past institutions and not merely an account of past events. Since the history of the past 200 years in Europe concerns us most intimately it is well to cover the past to the time of Louis XV or thereabouts in the first year of the course. The topics should be presented not in a fragmentary form but as discussion of topics.

The following topics should receive careful attention:

Egypt; the physical features and climate, the dynasties, the people, their religion, social life and industries, their monuments and contributions to civilization. Some up-to-date treatise should be consulted on these topics.

The Semitic people:

a. Early Babylon. The development and union under industrial development, conquests and decay.

b. Assyria. Contrast with Babylonia, the people, religion, institutions, and industries. Note also the warlike attitude of the two. Assyria became the first world power. Note any scientific contributions to civilization. Make careful study of the development of the city state, its origin and development into a nation.

c. Later Babylonia. Medes, Persians, Syrians, Hebrews, and Lydians. The international relations are complicated. Babylon is recognized as the greatest kingdom.

d. The Hebrews. Their early history should be learned; the longing for a land or home free from external influences. A study of their laws and government might profitably be made. Note also their domestic life, religion and relation to other nations. They developed no art or science; why? Their contribution to civilization was a religion.

e. The Phoenicians. The position of their country led to a new industry—commerce. Find some historical association with their capital cities, Tyre, Sidon, also the Cedars of Lebanon. Their greatest work and contribution was the colonization of new territories and the development of an alphabet.

In the above outline of study, follow carefully the civilizing influences; note the institutions of art, culture, and the various industries. It should be observed that the Semitic people have contributed to the world their religions, and the the contribution of the Hebrews—the Christian religion as set forth in the Bible—is the crowning work of all the races.

The Persians. Note their race, government, rapid development till they have absorbed Asia Minor. Study the plan of expansion of the building of roads, houses, etc. An important feature in their life is their religion, due to their contact with Greece. Their military campaigns are of small moment, except perhaps, against Greece.

GRECIAN HISTORY

The beginnings of Greece. The Greek people the different tribes, their early language and traditions. The land, its significance. The legendary periods; the Homeric and Mycenaean ages; the culture of these periods.

The Greek City State, 700-500 B. C. The political growth and expansion through sending out colonies. The typical city states—Athens and Sparta. The growth of Athens as a democracy, a monarchy, an oligarchy, a tyranny-democracy. The growth of Sparta, a monarchy.. The social and economic conditions in the two cities. The Graeco-Persian wars, cause and results (details not necessary).

Struggle for Supremacy in Greece. The Athenian supremacy; her naval policy—the Delian League. Pericles, his office, work and influence. Spartan supremacy, cause, result. Theban supremacy. Relation of states, attitude toward democracy. Macedonian supremacy. Political life in Greece. Leaders.

Union of Greece and the Orient. The Conquest of Alexander, his empire. Spread of Greek culture and its influence. Division of his kingdom.

Greek Architecture, Painting and Sculpture. Their development and influence upon the world. Literature, epic and lyric poetry, their development. The drama and its development. History, oratory, philosophy, the different schools and leaders. The underlying principles of each science, the Greek contribution to civilization.

Hellenic and Hellenistic Culture. The social life of the people. Spread to the East. The Achaean League, its origin, constitution, growth, conflict with Sparta. Final decline.

Little or no emphasis should be placed upon the following topics: The domestic strife and civil wars, except to note that Greece could never unite, hence was destined to be absorbed by a greater power; the foreign wars and international affairs, except as other nations came under the influence of Greek culture; the legendary and pre-historic periods, except as introductory; the numerous gods, except as influencing their social life.

ROMAN HISTORY

The Land: Geographical unity, position and extent. The people; mingled races; Italians, Greeks, Gauls, Etruscans, etc.

Traditional Origin: How founded, growth, etc. Growth of city of Rome, Patricians and Plebians. Units: Family, clans, and gens, tribes, city state, nation, and empire.

The Republic. Development of a constitution, class struggle, the patricians, plebian assembly, the political and social fusion. Unification of Italy under Roman rule. Subjects: Latin colonies, praefectures, allies. Bonds of union, patriotism, language, government. Punic Wars: occasion, Carthage a growing power, final struggle, Scipio and Hannibal, results. Conquest of East and West Mediterranean lands. World Empire—Evils: Luxury, gladiatorial games, etc. Greek culture and wealth; political, economic, and social results.

Transition from Republic to Empire: The Gracchi, attempts at reform, Agrarian laws, economic and political reform, land laws.

Military Rule. War with Jugurtha (senate corrupted). The Cimbri and Teutons. Marius and Sulla. The social war, massacres and proscriptions. (Details not necessary. Observe the patriotism shown).

Growth of Imperialism. Pompey, Caesar and Crassus, the Triumvirate, rise of Caesar, fall of Pompey, Caesar's constructive work, reform in provinces, clemency, and laws, character of Caesar.

The Empire. Augustus: Character, rule, world peace, results. The Julian's character of rule, stability of government, development of art, science, culture, and literature: Their worth. The Flavians. The Antonines. A World Empire. The later Government: Municipal, provincial. The army, its organization, provincial and local.

Education. Universities, grammar schools, and elementary schools. Religion, pagan and Christian; persecution under Nero, Diocletian, and Marcus Aurelius.

The Christian Church. Its organization, growth under Constantine. Division of the kingdom west and east. Struggle with the barbarians.

The Dissolution of the Roman Empire. The Teutonic invasions: East Goths, West Goths, their demands, results; the Huns: the Vandals: the Franks, Clovis and his successors. The fusion of Teuton and Roman culture. The Mohammedan peril; beginning, spread, check at Tours.

The Papacy. Development, temporal powers. The Franks and the Popes. Charles Martel, Pippin, Charlemagne's Kingdom, expansion, consolidation. Social and political conditions. Charlemagne crowned, 800 A. D. Charlemagne's successors. The Treaty of Verdun, 843; division of the kingdom. The new barbarian attack—Slavs, Norsemen, Huns—results. Feudalism, causes, extent, elements; land tenure and military service. Results in Western Europe, commerce, literature, social life.

France from the Treaty of Verdun to the twelfth century of the organization and development of the kingdom.

Germany, development, growth, rulers. The Holy Roman Empire, origin, extent, result. The struggle between the emperors and the pope. Growing jealousy. Hildebrand; Innocent III; Henry IV, etc.

The Crusades. Conditions in East before crusades. The Mohammedans, their attitude. The Turks, opposed to the Pilgrims. Result of crusades—developed commerce, universities, trade. The rise of towns.

The guilds—merchants—trade. The new monarchies, centralized power. England, France, Spain. Germany, Scandinavia, Switzerland, Netherlands, their struggle, rapid growth, and relation to foreign forces. Note their growth after the crusades.

The Renaissance. The nature and development of new-old ideas. The new learning, medicine, art, philosophy, literature. Some leaders of the movement: Dante, Petrarch and others.

The Protestant Reformation. Luther, his life and work his precursors. Counter reformation in the Catholic church; results. A century of religious wars, Protestant and Catholic.

England in the Seventeenth Century. Civil wars, causes and results. The Tudors, character, work, development, etc. The Stuarts, idea of government, religion, Civil War and the commonwealth; Cromwell and the Puritans; the Restoration, Revolution; a constitutional monarchy.

General European Development. Louis XIV of France. Leadership of France. Social and economic conditions. The extravagant court. Russia: Peter the Great; expansion; introduction of Western ideas, Prussia: A military power; expansion and influence over Europe. England: Expansion and industrial development; leaders and inventions.

GENERAL HISTORY II.

One Unit.

The object of this course should be to give a rather intensive study of the progress of Europe during the eighteenth and nineteenth centuries together with as much study of the conditions prevailing in Europe during the 17 years of the 20th century as possible.

The following topics are suggested for careful consideration.

The struggle between John and Parliament in England, Cromwell. Revolution of 1688. The English Constitution.

Review the reign of Louis XIV in France, Religious Differences. War of Spanish Succession.

Russia, Peter the Great, Expansion, English Expansion leaders.

Rise of Prussia, Prussian Militarism, Industrial England, Inventions.

Austria's Rise, Frederick the Great, Poland Partitioned Three Times, Maria Theresa and Joseph II.

France and England in India and North America.

Life in Europe; Town, Country, Religions. Same for England.

Modern Reforms and Science, Frederick, Catharine, Joseph.

France as a Republic, Revolutionary War. Reign of Terror, etc.

Napoleon, Congress of Vienna. Europe after Congress of Vienna until Revolution of 1820. Kingdom of Belgium.

Industrial Revolution (Study with great care and make applications).

Second French Republic and Second Empire and Causes.

Revolution of 1848, Italy, Cavour.

Formation of German Empire and Austria-Hungarian Union (Show relation of this to late war.) The German Constitution, Bismarck and Socialism.

Third Republic in France, Separation of Church and State. Poli-

tical and Social Reforms in England, Free Trade, Irish Question, Canada.

Australia, New Zealand, South Africa, Russia in the 19th Century, Freeing Serfs, Industrial Revolution in Russia, The Struggle for Liberty, Russia To-day, Turkey and the Eastern Question, Crimean War, Balkans.

China, Japan a World Power, Boxer Uprising, Russo-Japanese War. European powers in Africa, Decline of Spain, Boer War.

A careful study of actual conditions in Europe so far during the present century should be made. The origin of the war of 1914 should be developed from a study of the armies and navies of Europe, the social and political conditions in Europe, Hague Conferences, Socialism, etc. For this purpose a lot of reference work to standard current literature will be necessary.

Good text books are essential. No text book or series of text books is recommended. There are a number of good and suitable books on the market. Any texts covering what has been known as Ancient and Modern History, if thoroughly up-to-date, should be adequate in the hands of a good teacher. It is a matter primarily of selecting topics and arranging material.

Little stress should be laid upon wars and battles, campaigns and domestic strife, except where a national existence is at stake—as in French Revolution. Even then the details are not necessary. Individuals need not be studied except in rare instances. The learning of the rulers of each country is unnecessary. Know something of the great rulers, however. The same holds true with dates. Some eighty or more dates should be known as landmarks.

REFERENCE AND SUPPLEMENTARY BOOKS

Ancient Periods.

1. Herodotus, (For Egypt, Babylon, Persia, and Early Greece).
2. Bulfinch, "Age of Fable or Beauties of Mythology."
3. Abbott, Jacob; Biographies of Alexander, Hannibal and Caesar.
4. Church, "Story of the Odyssey" and "Story of the Iliad."
5. Gulick, "Life of the Ancient Greeks."
6. "Trial and Death of Socrates" (Macmillan, Publishers).

Medieval Period and Modern Period:

1. Symonds, J. A. "A Short History of the Renaissance in Italy."
2. Tarbell, Ida, "Life of Napoleon and the Empress Josephine."
3. Freyton, Gustav, "Martin Luther."
4. Green, "A short History of the English People."
5. Henderson, E. A. "Short History of Germany."
6. Macaulay, T. B., "Frederick the Great."
7. Molley, J. L., "Peter the Great."
8. Froude, "English Seamen in the Sixteenth Century."

See also bibliographies in various text books. Make free use of current standard magazines, as *World's Work*, *Review of Reviews*, *Literary Digest*, *The Survey*, *Outlook*, *The New Republic*, *Independent*, etc. If possible secure back numbers covering the four or five years.

ECONOMICS.

One-Half Unit.

The object of this course is to give the student a clearer and more comprehensive view of our economic life as it is today. It aims to arouse an intelligent interest in the many economic problems confronting us; to give the student a better understanding of present-day conditions; to trace through and analyze the cause of certain weaknesses in our economic life; and to show what has been done, is being done, and may be done to remedy these weaknesses. Throughout the course emphasis should be placed upon the responsibility of the individual in his relation to our economic questions, upon the fact that if there are evils in our economic life today man alone is to blame, and that these evils will remain until man, through intelligent, conscious effort, seeks out and applies the proper remedies. Thus the aim should be to give the student a wholesome, hopeful, constructive viewpoint in his approach to our economic problems.

That the student may have a better understanding of economic conditions and institutions of the present, the course should begin with a survey of industrial stages through which man has passed. A careful analysis should be made of the successive changes in the methods of making a living together with a more intensive study of the period of the industrial Revolution including the effects of this revolution upon all phases of our social and economic life. The origin of many of our present day institutions should be noted and a study made of the causes which gave rise to them and the factors which have modified their development.

The second part of the course should include a comparatively brief outline of the general subject-matter of Political Economy. Careful attention should be given to the definition of the more important terms such as are found in any treatise on Economics. This should be followed by an analysis of wealth under several heads—production, exchange, distribution, and consumption. In this study pure theory should be left in the background as far as possible. The aim should be rather to give the student as clear a view as may be possible of the principal subdivisions of the subject.

Under the third division of the subject the student should take up some of our present economic problems—such problems as taxation, federal banking system, insurance, transportation, agriculture, monopolies and trusts, and co-operation. While these subjects cannot be covered exhaustively, there are certain principles in connection with each of which every high school student should become familiar. Emphasis should be placed on the weakness in these several problems, of their bearing upon the life of each and everyone of us today, and upon what is being done today to meet these changing conditions. Other special problems may be taken up at the discretion of the instructor but care should be taken not to cover so wide a field that the student will become lost in the subject. Chief reliance should be placed upon the inductive, historical method. Throughout the course emphasis should be placed upon present-day conditions and problems. Concrete illustrations drawn from local experience should be used freely.

REFERENCE LIBRARY FOR ECONOMICS

Addams—Twenty Years at Hull House.
 Barker—Cash and Credit; G. P. Putman's Sons.
 Blackmar—Economics for High School; Macmillan.
 Bogart—Economic History of the United States.
 Bullock—Elements of Economics.
 Bullock—Introduction to the Study of Economics.
 Carver—Principles of Rural Economics.
 Ely and Wicker—Elementary Principles of Economics; Macmillan.
 Hadley—Economics; G. P. Putman's Sons.
 Marshall—et al—Material for the Study of Elementary Economics.
 Toothaker—Commercial Raw Materials.
 Van Hise—Conservation of Natural Resources.
 Wright—Industrial Evolution of the United States.
 Laing—An Introduction to Economics.
 The World Almanac.
 The American Yearbook.
 Free Publications of the United States Government.

1. Statistical Abstract of the United States (Department of Commerce, Washington).
2. Bulletin of Bureau of Labor.
3. Annual Reports, Bureau of Labor.
4. Special Reports, Bureau of Labor.

HIGH SCHOOL AMERICAN HISTORY AND CIVICS.

One-half Unit Each.

The work in these subjects should be thoroughly motivated, otherwise they fall short of their reasonable possibilities.

In High School U. S. History a careful study should be made of the great movements in our national life. Students should be given a thorough understanding of the work of such bodies as the Continental Congress, the Constitutional Convention, the Slavery Question, Tariff, Reconstruction, Internal Improvements, the Organization of Labor, the History of our Educational activities and System of Free Schools, Monopolies, Trusts, Interstate Commerce, Shipping, Inventions and the problems of the day. Liberal use of a good reference library is essential. Some current literature of high standard is a necessity.

Under both of these subjects classes may be organized to represent the public bodies they are studying as, constitutional conventions, local courts, boards of health, school boards, city council, county commissioners, etc. with profit.

SUGGESTED REFERENCE LIBRARY FOR CIVICS

Andrews—New Manual of the Constitution, American Book Co.
 Ashley—New Civics, Macmillan Co.
 Beard—American Citizen, Macmillan Co.
 Bryce—American Commonwealth, Macmillan Co.
 Bennison—Citizenship, World Book Co.

Boynton—School Civics, Ginn & Co.

Clark—The Government, What It Is and What It Does, American Book Co.

Dawes—How We Are Governed, Ginn & Co.

Dole—The New American Citizen, Heath & Co.

Dole—The Young Citizen, Heath & Co.

Dunn—The Community and the Citizen, Heath & Co.

Garner—Essentials in Civil Government, American Book Co.

Guitteau—Preparing for Citizenship, Houghton-Mifflin Co.

Hoxie—How the People Rule, Silver Burdette & Co.

Hill—Lessons for Junior Citizens, Ginn & Co.

Hill and Davis—Civics for New Americans, Houghton-Mifflin Co.

Magruder—American Government, Allyn & Bacon Co.

Marriott—Uncle Sam's Business, Harpers.

Stickles—Essentials in Civil Government, American Book Co.

Schwinn & Stevenson—Civil Government, Lippincott.

Willoughby—Rights and Duties of American Citizenship, American Book Co.

Newspapers and Magazines:

Literary Digest.

Outlook.

New Republic.

Review of Reviews.

The Survey.

World's Work.

Independent.

National School Review—free to teachers; 10 Jackson Place, Washington, D. C. Published twice monthly by the Committee on Public Information.

School Life—Bureau of Education, Washington, D. C. Published twice monthly; free to teachers.

The following bulletins from the Bureau of Education, Washington, D. C.:

No. 23—The Teaching of Community Civics, 1915—10c.

No. 28—Social Duties in High School, 1916—10c.

No. 46—The Public School System of San Francisco, Cal.

No. 54—Training in Courtesy.

Write Superintendent of Documents, Government Printing Office, Washington, D. C., for a list of bulletins issued by the Bureau and Departments. Many are free.

SOCIAL PROBLEMS.

One-half Unit.

The study of social problems is a necessary means of building an intelligent and progressive citizenship. We are faced on every side by problems and conditions which imperil life and prevent normal development of mind and wealth. Every member of society should have a comprehension of these conditions and know how to meet them. The least

permissible is to educate the ten percent who reach high school concerning these pressing problems, and their solutions.

Hence the object of this course is threefold: (a) imparting information about society today so as to produce intelligent citizens, (b) securing an understanding of the complex nature of human society, of the interdependence of all of the conditions with the hope that an appreciation of the results of our actions and of the rights of other may develop, and (c) the genesis of a desire by means of a comprehension of society to do something to conserve and to improve it.

Probably the most effective and fruitful methods of conducting this course will be these (a) conducting the class exercise as full and free discussions instead of requiring verbatim memory work; (b) liberal and expansive interpretation of the more important facts and situations by the instruction; (c) the liberal use of maps, charts and graphic material; (d) observation and investigation of local and state conditions; (e) reading and reporting of supplementary finding in class.

There are now available texts which follow along the lines laid down in this outline. Some of these texts are admirably organized and simply written so as to be within the capacity of normal high school students. The various topics and chapters are so well supplied with accompanying references as to make it unnecessary to give an extended list of references here. However, it may be well to indicate in a general way some of the chief directions where material may be found: (a) Weekly papers such as *The Survey*, *The Nation*, *The New Republic*, *The Public*, *Independent*, *Outlook*; (b) Monthlies such as the *Review of Reviews* and the *World's Work*; (c) Social Science periodicals such as *American Journal of Sociology*, *American Journal of Economics*, and *Annals of the American Academy of Political and Social Science*; (d) Government documents such as the reports of the Department of Commerce, Department of Labor and the Yearbooks of the Department of Agriculture.

OUTLINE

I. Influence of natural conditions, such as climate, soil, topography and natural resources and society.

II. Elements of population, as conditions which determine social life, such as distribution, increase, race and sex.

III. Immigration. Its history and changes, distribution, causes and effects and control.

IV. Labor:

Causes, extent and effects of unemployment.

Causes and remedies of the sweating system.

Extent, causes, results and prevention of child labor.

Number and occupations of women workers. Effects on working conditions of men. Need of regulation of conditions under which women work.

Nature, justification and development of labor organizations.

V. The distribution of wealth. How wealth is distributed. Causes accounting for distribution. Influence on health, education and welfare

of masses. Methods of redistribution such as social legislation, taxation, minimum wage, profit sharing, joint control of industry, co-operative organizations, and government ownership.

VI. The defective classes:

Causes, prevention, education and employment of the blind.

Causes, prevention, education and employment of the deaf.

Causes, extent, influence and prevention of insanity and feeble-mindedness.

VII. Crime and its treatment. Extent and causes. Newer forms. Modern attitude toward and treatment of criminals. Proper treatment of juvenile offenders.

VIII. The family. Nature, origin and types of family. Conditions and improvement of marriage. Growth, causes and remedies of divorce.

IX. Poverty and pauperism. Industrial and social causes. Prevalence. Prevention.

X. Liquor and intemperance. Causes of drink. Results of alcoholism. Substitutes for the saloon. Means of controlling the liquor traffic.

XI. Conservation of resources:

1. Natural resources: Forests, water, land, and minerals.

2. Plant and animal life. Losses from disease and pests. Preventive and conserving factors.

3. Human life. Dangers to life and means of combatting them. Prevention of industrial diseases. Reduction of infant mortality. Sanitary and health measures.

GENERAL SCIENCE.

One Unit.

This subject may be given as a regular High School subject for a full unit of credit provided the work is done in the same spirit and by the same methods as other High School sciences, together with suitable laboratory and demonstration experiments, and accompanying notebook. With the Junior High School plan of organization the subject can well be given in the eighth grade.

The purpose of the subject is not to give immature pupils an unclassified and bewildering accumulation of scientific facts but rather to offer a scientific explanation of the pupils environment, particularly of the problems related to the home, and the community in order that by a solution of his present varied experiences, he may develop an ability to meet and solve the more vital problems that will confront him as an adult.

An aim of no small importance is the development of logical habits of thinking, that the pupil may learn to attack his life problems from the proper angle and with the minimum expense of time. With this purpose in mind the value of the demonstration experiment can hardly be overestimated. As far as equipment permits, the recitation should hinge on demonstrations, training the pupil to draw conclusions and to discover

each pupil is trained in close observation and is enabled to draw his conclusion as an individual.

It is advisable in this course that the text book shall be used as a guide but that it shall not be followed too slavishly; that by this means both teachers and pupils may feel encouraged to collect and use the wealth of materials which may be found to apply to the subjects for discussion; furthermore by this method the phases of the subject that deal with the home and community interests of the pupil can be emphasized and those phases of minor interest can be touched upon lightly or even ignored.

PHYSIOLOGY.

One-half Unit.

A syllabus on this subject has been compiled by a special committee and it may be obtained from the Board of Administration, Bismarck, N. Dak. Every teacher of this subject should be supplied with this syllabus. It can be had for a few cents.

A laboratory notebook should be kept by each student. The pamphlet on North Dakota Health Conditions should be obtained from the State Department of Education and given careful consideration, especially if any members of the class intend to teach. The four pamphlets on health prepared by the Joint Committee of The National Council of the National Education Association should be in every school. These pamphlets are obtainable free as long as the supply lasts, from Dr. Thomas D. Wood, 525 West 125th St., New York.

The following pamphlets are issued by The Bureau of Education, Department of the Interior, Washington, D. C., and are for sale at a few cents each. Address, Superintendent of Documents, Bureau of Education, Washington, D. C. These pamphlets are especially recommended:

- No. 4. Health of School Children.
- No. 10. Physical Growth and School Progress.
- No. 16. Bibliography of Medical Inspection.
- No. 17. Sanitary Survey of Schools.
- No. 18. Fifteenth International Congress of Hygiene.
- No. 20. Rural Schools and the Hookworm Disease.
- No. 21. Schoolhouse Sanitation.
- No. 44. Organized Health Work in Schools.
- No. 48. School Hygiene.
- No. 50. Health of School Children.

Every classroom should be supplied also with the Health Charts prepared by the Joint Committee of the National Council of Education and American Medical Association. These are obtainable in large size from the American Medical Association Press, 535 Dearborn Street, Chicago. They sell for 25 cents each or a set of 35 can be had for \$5.00.

The following reference books are recommended:

- Allen—Civics and Health.
- Bigelow—Introduction to Biology.
- Conn—Yeasts and Molds in the Home.

Delano—American Red Cross Text on Home Hygiene and Care of the Sick.

Dempster—Pathfinders of Physiology.

Doane—Insects and Disease.

Downing—Third and Fourth Generation.

Galbraith—Personal Hygiene and Physical Training for Women.

Gulick—The Efficient Life.

Guyer—Being Well Born.

Hutchinson—Instinct and Health.

Hutchinson—Preventable Disease.

Hoag and Terman—Health Work in Schools.

Hoag—Health Index of Children. (Especially valuable).

Hoag—Health Studies.

Hough and Sedgwick—Human Mechanism.

Jewett—Health and Safety.

Jewett—The Next Generation.

Jewett—Physiology, Hygiene and Sanitation.

Lippitt—Personal Hygiene and Home Nursing.

Ritchie—Public and Personal Health.

Ritchie—Life and Health.

Ritchie—Teaching of Hygiene and Sanitation in the Schools.

Sargent—Health, Strength and Power.

Sedgwick—Principles of Sanitary Science and Public Hygiene.

Many modern text books.

PHYSICAL EDUCATION.

One Unit.

One unit shall be given for physical education when pursued two periods per week for four years. In no case shall more than one unit be given. Systematic physical culture shall be provided by all schools.

The aim is to encourage all students to participate in some form of physical training with a view to correcting physical defects and making a vigorous manhood and womanhood rather than the making of athletes. The stress should be placed at the right place in physical education.

During inclement weather where there is no gymnasium it is advised that the physical training period be used for class study of health, sanitation, hygiene, the rules and ethics of athletic games.

The following are suggested as appropriate exercises: gymnastic exercises, tennis, volley ball, basket ball, base ball, hand ball, football, track and field events for girls and boys.

School boards are urged to provide equipment for the various games and exercises. This is an important phase of school life and should receive encouragement from school officials.

A record of attendance and work must be kept for each pupil if credit is to be allowed.

REFERENCES: PHYSICAL EDUCATION

Bancroft and Pulvermacher—Handbook of Athletic Games, Macmillan Co., Chicago.

Bancroft, J. H.—Games for Playground, Home, School and Gymnasium, Macmillan Co.

Bancroft, J. H.—School Gymnastic, Heath & Co.

Beard, D. C.—Outdoor Handbook, Scribner.

Bolin—Gymnastic Problems, F. A. Stokes.

Comp—Book of Football, Century.

Clark, L.—Gymnastic and Rhythmic Plays, Sanborn.

Clark and Graham—Practical Track and Field Athletics, Duffield.

Curtis, H. S.—Play and Recreation for the Open County, Ginn.

Dudley and Kellor—Athletic Games in the Education of Women, Duffield.

Hammer, L. F.—Organizing the neighborhood for recreation, Russell Sage Foundation.

Reilly, F. J.—New Rational Athletics for Boys and Girls, D. C. Heath and Co.

Stecher—Guide to Track and Field Work, McVey (Philadelphia).

Withington—Book of Athletics.

PHYSIOGRAPHY.

One or One-half Unit.

The aim in physiography is to give training in scientific thinking and knowledge of the relation and importance of the chief factors of the physical environment to man.

The outline includes only those facts and principles of physiology most essential for a high school course. Each topic should be so developed as to show the causes of the physiographic facts and their consequence in relation to life. The life effects should be brought in in each topic treated so that the pupils may see each in its practical significance. Laboratory work should accompany and illustrate the study of the text and classroom. Notebooks containing carefully written record of all laboratory work and reports of all field trips are a part of the required work of the course. Conference time for the discussion of these records and reports is advised. Ample equipment is essential. This should be as carefully selected for the special needs of the course as that of any other science.

Of the sub-topics presented, especial emphasis should be placed on the lands, less emphasis on the atmosphere, and the ocean should be treated briefly and from the standpoint of its relation to the land. The physiography of North Dakota is a brief type study of the state as a region to which the general principles of physiography are applied. The natural features are studied in regard to structure, origin, development and their influence on the history and economic interests of the people.

The course in physiography should extend through the year, five days a week; about two-fifths of the time being devoted to individual laboratory work. When but one semester can be devoted to the subject, those topics with headings starred in the outline must be omitted and the re-

maining treated more briefly than in a full course. This short course, however, is not recommended.

OUTLINE

Introduction: The science of geography, physiology, importance of human geography, relation to other sciences and to history.

THE EARTH

*The Earth in Space: The Solar System, the Planets.

Form: Proofs, probable cause, consequences.

Size: Measurements, consequences.

Rotation: Evidences, day and night direction, longitude and time, latitude, navigation and surveying, effects on life.

Revolution: Evidence, rate, path, direction, effects.

Inclination of Axis: Change of season, length of day and night, apparent motion of sun, influence in life of man.

*Magnetism: Compass, magnetic poles, declination.

Maps: Projections, representation of relief, scales.

*Globes and Models.

THE ATMOSPHERE

Composition: Constituents and impurities and their relation to life.

*Height of the atmosphere.

Temperature: Source of heat; thermometers and their use; variations and their causes; isothermal charts of world; temperature distribution and range.

Pressure: Measurement by barometers; determination of altitude; relation to temperature; isobaric charts, distribution of pressure.

Circulation: Winds and their causes; instruments and methods of observation; classification of winds and their effects.

Moisture: Sources; evaporation; measurement of humidity; fog and clouds and their causes; conditions and forms of precipitation; rain and snow; dew and frost; hail and sleet; measurement of rainfall; rainfall charts; distribution of rainfall; relation to wind systems; relation of moisture and rainfall to life.

* All subjects thus marked are part of the second half unit.

Storms: Hurricanes and cyclones; characters; paths and rate of North American storms; relation to general weather conditions; seasonal weather; local storms; protection from storms; weather maps and forecasting; work of the U. S. Weather Bureau.

*Climate: Relation of weather to climate; factors of climate; climatic elements and controls; characteristic climate of the zones; continental and oceanic climate; desert and mountain climate; relation of climate to life and to human industry.

THE OCEAN

General Characteristics: Divisions; forms and depth of the ocean basins; composition; density and temperature of the ocean waters; topography and sediments of the ocean floor; effects on climate.

Movements of Ocean Waters: Waves, their causes and effects; cur-

rents and rates of movement; causes and their proofs; influence of currents on climate and life; tides, their nature and causes; variations and their causes; effect on navigation and harbors.

Life Relations: A barrier and highway; trade routes; the life of the sea; coral reefs; economic products.

THE LAND

*The Mantle Rock: Origin and importance; weathering effects of heat and cold; frost action; wind work; the work of plants and animals; chemical changes.

*Soils: Relation to sub-soils and bed rock; fertility; kinds of soils and their origin; formation and removal of soil; soil erosion and its prevention; plant foods and fertilizers; soil water and temperature; conservation of the soil.

*The Bed Rock: Minerals and rocks, kinds of rocks and their origin; composition and structure of the rocks; alteration of the rocks; mineral products and their uses.

*The Ground Water: Occurrence and origin; the water table; movements of ground water; the work of ground water; caverns and cave life; springs and wells; artesian wells; ground water and health; dry farming.

Land Forms: The interpretation and use of topographic maps; elevation and depression; the physiographic cycle; classification according to origin and topography; relation of the primary land forms, plains, plateaus, and mountains; secondary land forms.

Plains: Kinds of plains; coastal plains—the Atlantic and Gulf plains. old coastal plains of the eastern interior; glacial plains, the prairies of the Middle West; lake plains—the Red River Valley; alluvial plains—their formation and importance in history, the Mississippi plain; old plains of erosion—pene-plains of New England and Piedmont, effects of climate and rock structure on the topography of plains; relation of life to different forms and climates of plains.

Plateaus: Stages in the life history of a plateau; young plateaus; dissected plateaus; old plateaus; broken plateaus; effect of climate and rock structure on topography of plateaus, canyons, mesas and buttes; life condition on plateaus.

Mountains: Classes of mountains; block mountains; folded mountains; domed mountains; complex mountains. Life history of mountains; effects of climate and rock structure on mountain topography; mountain barriers and passes; forests reserves; life conditions in mountains.

*Volcanoes: Distribution; types of volcanoes; phenomena of eruptions; causes of vulcanism; history of volcanic cones; influence of volcanoes on topography and life.

*Movements of the Earth Crust: Changes of level—along the coasts, in the interior; earthquakes, frequency and distribution; causes destruction of life and property.

Rivers and Valleys: River systems and their water supply; life history of rivers; the work of rain and running water; valley develop-

ment and surface topography; water falls and rapids; terraces, flood plains and deltas; revived rivers; dismembered rivers and drowned valleys; importance of rivers and valleys to man—navigation, power, irrigation and drainage.

Glaciers: Nature of glacial ice; conditions necessary for glaciers, types of glaciers; the work of glaciers; ancient glaciers and ice sheets; contrast of glaciated and non-glaciated regions of North America; economic importance of glaciation in the United States.

Shore Lines: Shores of oceans and lakes; types of shore lines; forms of elevation and depression, modification by waves, currents, tides and rivers; harbors and their location; influence of harbors and coast lines.

*THE PHYSIOGRAPHY OF NORTH AMERICA

A Type Study in Regional Geography.

*Location: Boundaries and general relations.

*Weather and Climate.

*Geographical Structure and its History.

*Topographical Features: The three plains and their dividing escarpments; the glaciated and non-glaciated portions.

*The Red River Valley: Glacial Lake Agassiz; the Red River of the North; beach lines and deltas.

*The Drift Prairie: Glacial features; Pembina "Mountains;" Turtle "Mountains;" and other residuals; the Mouse River Valley; Devils-Stump Lake Basin; the Sheyenne, James and Pembina Valleys.

*The Great Plains: The Coteau du Missouri; the Altamont moraine and other glacial features; the "Bad Lands" of the Little Missouri; the Kildeer "mountains" and other buttes and mesas; the Missouri River and its valley.

*Economic Physiography: Soils; lignites; clays; building materials; ground waters; streams and lakes.

*Life Relations: Vegetation; animal life; native peoples.

Geographic Influence in Settlement and Development: Exploration and settlement; the fur trade, farming and ranching; roads and railroads; location of cities and towns; manufacturing and mining; urban and rural relations; the relation of conservation and development.

REFERENCE AND SUPPLEMENTARY BOOKS

Brigham—Geographical Influence in American History.

Crosby—Common Minerals and Rocks.

Davis—Elementary Meteorology.

Greely—American Weather.

Powell—Physiographic Regions of the United States.

Russell—Rivers of North America.

Sutherland—The Teaching of Geography.

Todd—New Astronomy.

Willard—Story of the Prairies, revised edition.

Wright—The Ice Age in North America.

Many modern text books.

United States Bulletins.

State Geographical Survey Bulletins.

BOTANY AND ZOOLOGY.

A knowledge of botany and zoology forms in a part a proper basis for the study of agriculture, domestic science, human physiology, and physical education. Botany and zoology, therefore, should receive attention from all pupils in high school.

The outlines given below merely hint at what is to be done; any good text book will suggest many necessary details.

There are courses in which there should be laboratory and field work. The examiner, therefore, will require notebooks, as evidence of laboratory work. The chief features of an acceptable science laboratory notebook are: (1) drawings and notes made from actual field and laboratory work—it is practically useless to make copies of the texts and other books; (2) numerous, large, accurate, well-executed and properly labeled drawings; (3) brief, well-arranged, descriptive and explanatory notes; (4) a list of all laboratory exercises and field trips.

The time required for each of the four courses—Botany I and Botany II and Zoology I and II—is three recitation periods and two double periods or the equivalent for laboratory and field work per week for eighteen or nineteen weeks.

EQUIPMENT SUITABLE FOR THE BOTANY AND ZOOLOGY LABORATORY

1. Tables at which pupils may sit and look into their microscopes, and on which they may place their drawing paper. They should not be over 29 inches high and while "kitchen" tables will do, they would better be about 4 ft. by 5 ft. or $5\frac{1}{4}$ ft. These should be in a well lighted room.

2. In general there should be one compound microscope for every group of two pupils and a dissecting microscope for each pupil in the class. A school that will usually have a class of six should have three compound and six dissecting microscopes. Three compound microscopes in a small school should be sufficient. Some such instrument as the following are recommended. Bausch and Lomb compound microscope catalog number BH2, objectives 2-3 and 1-6, eyepiece $1\frac{1}{2}$ inch, double circular nosepiece at about \$30.50 to \$33.00. The Barnes dissecting microscope Bausch and Lomb's catalog number T1, 1 inch double lens, at about \$2.50 to \$2.75.

There should be dissecting needles. (These can be made by setting the eye of a common sewing needle into a soft pine stick about the size of a pencil); glass slips (slides); cover glasses; pipettes or droppers; a section razor (a common sharp—but not too thin—razor is satisfactory); dissecting knives; wide mouthed two-ounce or four-ounce bottles with stoppers; evaporating dishes of glass; glass jars; one or two bell jars; denatured alcohol or formaldehyde; reagents for testing for starch, etc.; notebook, paper, sharp hard pencils, pen and ink, and pair of small forceps. There should be apparatus for germination of seeds.

3. If the school is not equipped for Chemistry, there should be such chemical and equipment as are necessary to make tests for the purpose

of defining oxygen, hydrogen, nitrogen, carbon dioxide, sulphur, phosphorus, etc.

4. Plant material should be collected during the summer and preserved in 50 percent to 60 percent alcohol or dilute formaldehyde. Some material may be had from the University, from the Agricultural College, from the Woods Holl Laboratory, Woods Holl, Mass. *Mucor*, *saprolegnia* and bacteria must be grown in the laboratory. Lilac-mildew and wheat rust and the smuts can be collected as can horsetail and many others, if taken in season. Living material should be used whenever possible.

To be sure to have something at hand to work with it would be well to purchase two-ounce bottles of fruiting *Spirogyra*, *Nostoc*, *Vaucheria*, *Fucuc*, *Callithamnion*, *Ricca*, *Marachantia*, Mosses, *Prothallia* of Ferns, the sporophyte of *Equisetum*, *Selaginella*, Male and Female cones of white pine at the time of pollination, cones one year old, cones two years old (dry).

In like manner material should be had for zoology—living if possible; but some will necessarily be in a preserved state and there should be a variety of such, so that the work may not be stopped when the living material can not be had. Living amoebae can be had by express, or mail, and much other fresh material may be had in that way.

There should be a few prepared slides (not many); one on the embryo of the fern, fertilization in White Pine, embryo in same. One of the cross-sections of a leaf. Other material should probably be prepared in laboratory.

These will make a good beginning, but other things will probably be found to be needed.

REFERENCE AND SUPPLEMENTARY BOOKS

- Bailey—Plant Breeding.
- Benedict—Chemical Lecture Experiments.
- Chapman—Bird Life.
- Clodd—A Primer of Evolution.
- Clodd—The Story of the Primitive Man.
- Conn—Bacteria, Yeasts, and Molds.
- Davenport—Domesticated Animals and Plants.
- Davenport—Principles of Breeding.
- DeCandolle—Origin of Cultivated Plants.
- Dixon—Human Side of Plants.
- Dodge—Nature Study and Life.
- Freeman and Chandler—Ward's Commercial Product.
- Ganong—The Teaching Botanist.
- Harwood—New Creations in Plant Life.
- Hornaday—American Natural History.
- Hopkins—Soil Fertility and Permanent Agriculture.
- Kellog—Animals and Man.
- Lassar-Cohn—The Chemistry of Daily Life.
- Lucas—Animals of the Past.
- Osterhout—Experiments With Plants.
- Pammell—Weeds.
- Pinchot—A Primer of Forestry.
- Phillips—The Romance of Modern Chemistry.
- Prudden—The Story of Bacteria.

Sadtler—The Chemistry of Familiar Things.

Sargent—Plants and Their Uses.

Snyder—The Chemistry of Plant and Animal Life.

Twiss—Science Teaching.

Vulte—Household Chemistry.

Weed—Farm Friends and Foes.

United States Bulletins.

BOTANY I.

One-half Unit.

If this course precedes Zoology I, the elementary study of oxygen, nitrogen, etc., should take place here. See Zoology I.

I. Introductory—(a) Universality of plants in regions at all favorable to their growth. (b) Relative members of prosperous plants in deserts and extremely cold regions. (c) Plants upon trees and rocks and in caves. (d) Dependency of man upon plants—1, for food; 2, food for domestic animals; 3, clothing; 4, shelter; 5, medicine; 6, paper; 7, fuel; 8, covering of the earth. (e) Plants not primarily to serve man—timber, fruit, etc., first for their own uses. (f) Plants must work to live. (g) Plants must have materials and structure with which to work.

II. General Structure and Physiology of Plants—(a) The cell—cytoplasm, nucleus, plasmic membrane, sap cavity, wall. (b) Role of water in the plant—osmose, path of transfer, transpiration, turgidity. (c) Photosynthesis—function of chlorophyll, carbon dioxide, evolution of oxygen. (d) Respiration—necessity of oxygen in growth, evolution of carbon dioxide. (e) Digestion—digestion of starch with diastase and its role in the translocation of foods. (f) Irritability. (g) Growth, or assimilation.

Laboratory: Living material must be used for the study of this section. (a) The cell—root hairs, hairs from the base of the leaf of "Wandering Jew," zygnuma, spirogyra, (for protoplasm) saprolegnia (water mold), epidermis and sections of leaves. (b) Osmose—spirogyra, mucor, slices of beet or carrot, root hairs, longitudinal sections and cross sections of roots and stems (box-elder and corn). (c) Photosynthesis—zygnuma, spirogyra, sections of leaves. (d) Respiration—Germinating seeds. (e) Digestion—germinating seeds. (f) Irritability—seedlings. (g) Notebook required.

III. General Structure and work of higher plants—(a) Roots—structure, growth, kinds, uses. (b) Stems—structure, growth, kinds, uses. (c) Leaves—structure, arrangement, kinds, forms, uses. (d) Buds—structure, kinds, arrangement. (e) Branches; (f) Flowers—definition, parts, use (g) Polleination. (h) Brief treatment of fertilization. (i) Seeds and their distribution. (j) Seedlings. (k) Conditions of germination.

Laboratory—(a and b) Study of tissues of the stems of Box-Elder and corn. Determine in general the difference between a stem and a root—externally and internally. (c) Additional study of structure of

leaves. (d) Structure of buds. (e) Structure of typical flower. (f) Study of pollen grain. (h) Germination of seeds.

IV. Ecology—(a) Relation of plants to each other. (b) Relation of plants to water, soil, heat, light, wind—plant societies.

V. Some relation of plants to commerce and industry. (a) Forests; 1, Construction material; 2, fuel; 3, tree planting; 4, forests and climate; 5, forests prevention erosion; (b) Plant breeding—1, variation; 2, selection; wheat, corn, potatoes, etc. (c) Formation and preservation of soils. (d) Weeds.

BOTANY II.

One-half Unit.

I. The Great Divisions of Plants—Some of the problems of this section are nutrition, reproduction, alternation of generations, theory of organic development, general principles of classification and economic value of plants. Distinguish between a spore and a seed.

(a) Algae—1, Blue-green, (1) Nostoc, (2) Oscillaria. 2. Green Algae, (1) Spirogyra, (2) Zygnema, (3) Vaucheria. 3 Brown Algae, (1) Fucus. 4. Red Algae, (1) Callithamnion.

(b) Fungi—1. Algae fungi, (1) mucor, (2) saprolegnia. 2. Sac-fungi, (1) Lilac mildew—microspheara. 3 Aecidium-fungi, (1) Wheat rust. 4 Bacidium-fungi, (1) Mushrooms, (2) Smuts. 5. Bacteria, (1) Forms, size and structure, mobility, reproduction, nutrition, relation to decay, relation to agriculture and gardening and other industries.

(c) Bryophytes—1. Ricca, 2 Marchantia, 3, Mosses.

(d) Pteridophytes—1, Ferns, 2, Equisetium, 3, Selaginella.

(e) Angiosperms—1, Lily, 2, Leading families.

The laboratory work of this section is the structure, reproduction, and, in general, the life history of a typical plant of each subdivision.

II. Plant tissues: A detailed study of structure and functions of root, shoot, and leaf angiosperms.

Laboratory: Longitudinal-sections and cross-sections, roots, stems and leaves.

III. Angiosperms continued: Seeds—germination. Review physiology of young plants. Forms of stems and leaves. Flowers. Legumes as nitrogen gathers.

Laboratory—(a) Tests for starch, albumen, irritability, etc. (b) Nodules on roots of clover and alfalfa.

IV. Reproductions in lower plants and animals and in higher plants. 1, spores. 2, seeds. 3, "Struggle for existence." Inherited characters.

V. 1, Plant culture. (a) Spraying. (b) Disinfection. (c) Seed treatment. (d) Grafting. 2. Relation of plants to animals. (a) Food. (b) Diseases of animals caused by plants. (3) Value of plants to man. 4. Conservation of forests.

Laboratory—Exercise in grafting.

VI. Bacteria, yeast, molds, rusts, smuts—1. General notion of bacteria. (a) Those helpful to man,—especially, nitrogen gathers; (b) Those harmful to man,—especially those causing disease, as typhoid and

yellow fever and tuberculosis. 2. Yeast. (a) Structure and reproduction. (b) Their function in useful industries. 3. Bread and fruit molds—saprolegnia.

ZOOLOGY I.

One-half Unit.

I. Very elementary study of oxygen, nitrogen, carbon, carbon dioxide, phosphorus, sodium sulphur. Give these sufficient attention to secure reasonably clear notions of the substances.

Laboratory: Use any good manual of chemistry and such chemicals and apparatus as are necessary for testing these substances. Use notebooks.

II. The lowest animals—1. Amoeba or paramoecium, (a) Habitat. (b) Structure. (c) Food and methods of securing it. (d) Digestion and assimilation. (e) Reproduction. (f) Diseases caused by protozoans.

Laboratory: Select a suitable manual. Use compound microscopes. If specimens of the amoeba cannot be found in the vicinity, they may be had by mail or express. Paramoecia are found in one of the stages of effusion of hay. Use notebooks.

III. The hydra, or the very simple metazoan: For its simple structure and simple life processes, development of organs and division of labor—a simple form of sexual reproduction.

Laboratory: Use manual, dissecting and compound microscopes, and notebooks. If specimens cannot be found in vicinity, they may be had by mail or express. However, if the laboratory work in this section is found to be too difficult, it may be omitted.

IV. Worms: 1, Earthworms; (a) Habits. (b) General structure. (c) Food, digestion and assimilation. (d) Reproduction. (e) Value to man. 2. Other worms, especially those causing disease.

Laboratory: Do completely the work outlined in some good manual. Use dissecting pans, scissors, lens, etc., and notebook.

Note. Care should be taken to teach throughout this course that animals are entitled to fair and kind treatment. Induce the pupils to read "Black Beauty" and other similar work.

V. Insects. 1, Grasshopper. (a) An injurious insect. (b) Cicadas. (c) Aphids—means of destroying them. (d) Metamorphosis of dragonflies. 3. Bugs. (a) Water-bugs. (b) Cicadas. (c) Aphids—means of destroying them. (d) Scale insects. 4. Beetles. 5. Butterflies and moths—metamorphosis of Sphinx-moth. 6. Flies—carrier of typhoid fever germs. 7. Bees—economic value.

Laboratory: Study structure, physiology, reproduction and life history of the grasshopper or locust as type of insects. Field work.

VI. Amphibians: 1. Study of the frog as an introduction to vertebrates and to man as an animal. 2. The toad. 3. The salamander.

Laboratory: Do completely the work outlined in a good manual. Make drawings and notes. This work should include habitat, locomotion; skin muscular system, nervous system, digestive system, circulatory system, skeleton, reproduction and metamorphosis.

VII. Read in class or out of class at least one good textbook of Zoology. In this reading cover the whole subject of zoology for the purpose of getting a general review. Do some field work in connection, (no laboratory work) and make reports in notebooks.

Read supplementary books on protozoans, hydra, worms, insects, and amphibians.

VIII. General classification of animals, including sub-classes of mammals, with examples of each class and sub-class. Value of breeds for the farm.

ZOOLOGY II.

One-half Unit.

I. A Sponge: One or two days should be devoted to sponges. Behavior, habits, environment, structure, economic interests.

II. Sea-Urchin or Starfish: Two or three days should be spent on one of these—the one of which specimens can more easily be secured. Habits, structure.

III. Crayfish or Lobsters: Habits, Environment, Structure. Physiological processes. Man's economic interests.

Laboratory: Dissection pans and instruments. Dissecting microscopes. Use a good laboratory manual and notebook. If living specimens cannot be found in the vicinity they may be had by express or parcel post. Preserved specimens should be among the laboratory supplies ready for use at any time.

IV. Molluscs: Clam or some other mollusc used as type. Locomotion. Feeding. Structure. Production of calcareous shell. Physiology. Reproduction. Habitat. Economic interests in some of the branch. Fossils of molluscs.

Laboratory: Use manual and work out the points mentioned above. Living specimens may be had by express or mail, if they are not found in the vicinity.

V. Fishes: The perch or some other used as a type form. Habitat. Locomotion. Food. Structure. Respiration. Reproduction. Divisions of the branch. Economic interest.

Laboratory: Use manual. Fresh specimens should be had. Secure by parcel post or by express, if they are not to be found in the vicinity.

VI. Reptiles: Pupils should be taught that animals are entitled to fair and kind treatment. They should be taught to protect toads and most snakes, as they are of economic value as well as entitled to fair treatment.

If laboratory work is found to be difficult, it may be omitted. Field work can be done.

General study of reptiles—classes, harmful reptiles, fossil reptiles.

VII. Birds: Field work—habitat, flight, food, sociability, nesting, migration, songs, care of feather, molting, senses, color. Recognition of common birds at sight or on hearing their notes.

Laboratory: External and internal structure of the pigeon, using a good manual as a guide.

VIII. Mammals: General characters. Detailed study of a typical mammal,—the rabbit,—in field, laboratory and recitation room. External and internal structure. Characters of classes of mammals. Value to man. Most valuable domesticated breeds. What should be the character of man's treatment of same.

IX. Geological history of animals. Evolution of animals. The general principles of heredity.

X. Parasites and diseases caused by same.

CHEMISTRY.

One Unit.

This subject should receive much attention because it is essential in all modern industry, agriculture and daily life, and because defense in time of war absolutely depends upon it.

The course in general chemistry should extend throughout the year. A very satisfactory weekly program consists of two forty-minute periods for class work, two double periods for laboratory work and a third double period (preferably on Friday) one period of which may be used for class work or both periods for laboratory work according to the conditions of the work at that time. With this flexible arrangement it is easy to keep the class and laboratory work properly correlated.

The work comprises (1) Experiments performed and explained by the teacher, (2) Individual laboratory work on the part of the pupil and (3) Recitation and quizzes covering all phases of the experimental work as well as the supplementary study of text and references.

Naturally the view-point of the teacher will influence his selection of the text and this will determine to a large extent the choice of materials and the sequence of study. There are several excellent high school texts. Direction for performing experiments are found in some of them, but it is more satisfactory to use a laboratory manual to guide the student in his experiments.

Neat and accurate records of all experiments should be made by the pupil, showing clearly the objects, the methods, the results and above all, his own observations, inferences and conclusions as to the nature of the phenomena he has produced and the meaning of it all. Pupils must not be permitted to infer that mere notebook making is the end and aim of scientific study. This they are prone to do. On the other hand, slovenly and careless work either in the performance of the experiments or in recording of the results should not be tolerated.

The examiner reserves the right to require that the notebooks be sent to him with the students' examination papers.

Before beginning the detailed study of chemical phenomena it is an excellent practice of many good teachers to indicate to the beginner at the outset something of the tremendous importance of the science in the development of modern civilization and to impress upon him the funda-

mental relation of chemistry to industry as well as in the affairs of his own daily life. He should realize that Physics and Chemistry are absolutely fundamental to a rational knowledge of such sciences as Agriculture, Biology, Sanitation, and Household Economics and to success in all manufacturing operations.

It is generally agreed that the study should begin with familiar forms of matter and familiar phenomena, but care must be taken to select phenomena that can be subjected to experiment and properly interpreted by the beginner. It is therefore necessary that the teacher should carefully consider the most natural method of approaching the subject and determine definitely the fundamentals which are to be the chief object of the instruction. It is also important that those who prepare examination questions should have clearly in mind these same fundamentals in order that the examination may fairly test the pupil's real insight and ability to interpret chemical phenomena, rather than his ability to memorize wide range facts from his text.

The essential considerations in the teaching of chemistry are well summed up in the following extract from the report of the committee on chemistry for the Commission on Accredited Schools and Colleges of the Association of Colleges and Secondary Schools of the North Central States:

"(1) Technique of experimentation.

Properties of common apparatus in respect to structure and material.

For example how to make an apparatus air-tight and why.

Object of such operations as washing and drying gases, and how the object is attained.

Physical properties which may be used for recognition of each substance and for explanation of all observations.

Judicious use of proportions and materials.

Influence of conditions (temperature, homogeneous and heterogeneous mixture, etc.) on chemical change.

(2) Physical Phenomena, their recognition, description and physical interpretation.

(3) The more strictly chemical application of the results.

For example, inference in regard to the nature of a chemical change which must have led to the result observed.

Making the chemical equation from adequate data.

The material basis for the above may be found for the most part in the employment of a restricted number of elements and a few of their compounds. Facts should be simplified and systematized by generalization, and generalizations ("laws"), should be illustrated and applied to familiar things. The usual theoretical explanations should be given as facts accumulate. Laws and theories derive their importance from the facts, not vice versa and none should be given unless and until the corresponding facts have been encountered in laboratory or class room experiments."

An equipment for an elementary course in chemistry need not be very costly. A list of apparatus and chemicals needed and directions and

drawings for arranging laboratory tables, sinks, water supplies, etc., where water and gas are not available, have been prepared by Dean E. J. Babcock, College of Mining Engineering of the State University and will be furnished by him free, on application.

Chemistry is so fundamental to the industries and activities of daily life and is so essential to a proper understanding of other sciences that it should be taught in every high school and generally elected by the pupils.

REFERENCES:

- Bradley, R. H., *An Inductive Chemistry*, D. Appleton and Company.
Faraday, Michael, *The Chemical History of a Candle*, Harper's.
Ostwald, W., *Elementary Modern Chemistry*, Ginn and Co.
Ramsey, S. W., *Experimental Proofs of Chemical Theory for Beginners*, Macmillan Co.
Smith, Alexander, *Elementary Chemistry*, Century Co.
Smith and Hall, *The Teaching of Chemistry and Physics*, Longmans.
Twiss, G. R., *Science Teaching*.
Woodhull, J. H., *Simple Experiments in Chemistry*.

For the teachers themselves or for especially promising students there should be in the library some of the Alembic Club Reprints, obtained of the University of Chicago Press, for 40-50c a piece, say the Discovery of Carbon Dioxide by Black, the Decomposition of the Alkalies by Davy, etc.

PHYSICS.

One Unit.

The study of physics is fundamental to the successful pursuit of most of the natural sciences. The realm of modern engineering has for its foundation physics. Previous to modern specialization physics or natural philosophy comprised a wide range of subjects, not closely or logically related. These subjects were made up largely of an assortment of facts more or less isolated. The endeavor of modern physics is to gather the facts of physical phenomena and discover their law of operation separately or collectively.

Modern physics has made remarkable progress within the past few decades owing largely to a series of remarkably brilliant fundamental subjects which had hitherto remained isolated from each other. These discoveries were made possible due to the progressive advance of the experimental method which had its inception with Galileo. Previous to this time natural science had been almost completely philosophical in its aspect.

The gathering together and correlation of physical facts in the form of law should be the key-note in the study of physics both in the college and the high school. This does not mean that the mode of approach or presentation of the subjects to students should be the same in both cases. In fact the method of presentation should be quite different in the two cases.

While the aim of the high school teacher should be the presentation of facts and their analysis and correlation, it must be done, if the work is to be successful, from a non-mathematical point of view. The analysis can be stated in words rather than in the language of mathematics. As an illustration, every boy knows that when he swings a stone attached to a string about his head, the pull is harder the longer the string and the heavier the stone. He may be in doubt about how the pull depends upon the angular speed of the stone but a simple experiment will soon convince him. Approached from this point of view he gains a better idea of centrifugal force, than if he were required to "substitute in a formula," which finds its way into the class room without explanation. Students are, as a rule, interested in physical phenomena and especially those that are new to their experience. The wide-awake teacher will enlarge his store of technical illustrations beyond the range of the text book. The result will be a more pleasant attitude on the part of the student toward the text book. Without the use of mathematics beyond the grasp of the student the analytic point of view will be realized with greater facility.

The course should be organized to include individual laboratory work on the part of the students as well as recitations based upon some good text book. The experienced teacher will avoid the use of the lecture method. Too frequently the new teacher will attempt to model the course after the plan of the college course. No greater mistake can be made for the college course is designated to care for a large group of more mature students with a broader experience and training. It is well to supplement the text book and materials with experimental demonstrations before the class from which the student may then and there be asked to draw inferences and conclusions.

The laboratory exercises should not be involved or complicated. There are a number of good laboratory manuals available but the manual becomes worthless when the student cultivates by its use the habit of merely following directions. The laboratory work is an expression of the reaction of the student toward the subject. It cultivates a certain precision of measurement and tends to develop manual dexterity. To bring about the desired results good apparatus is absolutely essential. Frequently the student is confronted with home made apparatus of a crude rough character. Good results cannot be obtained with this kind of equipment and there is no incentive on the part of the pupil to do precision work.

Written reports of the laboratory exercises are quite essential. They should contain clearly and tersely stated the object of the experiment, the method, results, and inferences or conclusions arrived at. They should be neat and written in good English. The Physics teacher has in this respect an opportunity to co-operate with the teacher of rhetoric. Too much stress should not be laid on long and detail reports. Brevity and clearness are essential.

The following outlines in brief to organization of a course in Physics including laboratory work for the high school.

Recitation. The recitation work should comprise three non-consecutive periods of 40 minutes each per week for thirty-six weeks. It should be based upon a suitable text book (see references) and supplemented with experiments before the class by the teacher from which the students should then and there draw conclusions. The division of the work may be divided approximately as follows, mechanics, 11 weeks; sound, 3 weeks; heat, 6 weeks; electricity and magnetism, 10 weeks; light 6 weeks.

Laboratory. The laboratory work should run parallel to the recitation work. Two double periods per week should be devoted to the laboratory exercise. The laboratory reports should be written in the laboratory. Approximately 30 experiments of which 20 should be of a quantitative nature should be performed during the year. The note books should be preserved.

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(Physics)

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 Hawkins, V. D., *Applied physics*. 1912. 199 pp. Longmans.
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 Rotsh, A. L., *Conquest of the air*. Moffat.
 Snyder and Palmer, *One thousand problems in physics*. Ginn.

Laboratory Manuals.

- Chester, Dean and Timmerman, *Laboratory manual in physics*. American Book Co.
 Chute, H. N., *Laboratory guide to accompany Carhart and Chute's physics*. Allyn and Bacon.
 Chute, H. N., *Physical laboratory manual*. Heath.
 Conard, H. E., *Physics manual and laboratory note book*. Loose leaf. 1912. 83 exs. Atkinson.
 Davis, J., *Laboratory physics*. Loose leaf. Welch.
 Fuller and Brownlee, *Laboratory exercises in physics (to accompany Carhart and Chute's physics)*. 1912. 315 pp. Allyn.
 Gorton, R. R., *Laboratory exercises in physics*. Appleton.
 Linebarger, C. E., *Laboratory manual of physics*. Heath.
 Millikan, Gale and Bishop, *First course in laboratory physics*. 1914. Ginn.

Turner and Hersey, National physics note book sheets. Knott.
Twiss, G. R., Laboratory exercises in physics. 1906. Scott.

AGRICULTURE.

One Unit.

The unit course in Agriculture should be preceded by at least one year of science work. The regular class work should be supplemented with demonstration experiments, laboratory work, field trips and accompanying note books. The work as outlined in the syllabus should be very practical and should have the following aims:

1. Arouse interest in Agricultural pursuits.
2. Develop the scientific attitude toward farming.
3. Disclose the possibilities of agriculture as a worthy and profitable vocation.
4. Acquaint the student with best agricultural literature.
5. Encourage the reading of good agricultural literature.
6. Familiarize the student with governmental agencies working for better agriculture.
7. Make better homes and better living in rural communities.

REFERENCES

- Bailey, L. H., Fruit Growing. Macmillan.
Bailey, L. H., Manual of Gardening (advanced). Macmillan.
Bailey, L. H., Plant Breeding (advanced). Macmillan.
Bowman, J. C., The promise of country life. Heath.
Bowsfield, C. C., Wealth from the soil. Forbes.
Bowsfield, C. C., Making the farm pay. Forbes.
Card, F. W., Farm Management (advanced). Doubleday.
Craig, J. A., Judging live stock. Kenyon.
Davis, Productive farming. Lippincott.
Fletcher, S. W., Soils. Doubleday.
Georgia, Ada E., Manual of weeds. Macmillan.
Goff, E. S., Principles of plant culture.
Harper, N. W., Animal husbandry for schools. Macmillan.
Hunt and Burkett, Soil and crops. Orange.
Keith, F. E., Agricultural chemistry (advanced). Wiley.
Kyle and Ellis, Fundamentals of farm life. Scribner.
Lewis, H. R., Productive farm poultry. Lippincott.
McKeever, W. A., Farm boys and girls. Macmillan.
Plumb, C. S., Beginnings in animal husbandry. Webb.
Robinson, J. H., Principles and practice of poultry culture. Ginn.
Snyder, H. S., Soils and fertilizers. Macmillan.
Voorhees, Ed. W., Forage crops. Macmillan.
Wilson and Warburton, Field crops. Webb.
Wing, H. H., Milk and its products. Macmillan.

HORTICULTURE.

One-half Unit.

Horticulture is related to both botany and agriculture, but in both science and practice it differs from each.

As a science, horticulture deals practically with plants as related to heat, light, moisture and plant food and also with plant improvement through crossing and selection.

As an art, horticulture deals with the many kinds of plant manipulation, such as, transplanting, pruning and propagating in its many forms.

The agriculturalist treats his plants as a crop or en masse.

In horticulture practice, the individual plant generally receives consideration.

The horticulturalist aims to exercise a more perfect control over his plants than is possible in most lines of agriculture.

Among the things he seeks to attain are: Size, earliness, fruitfulness, quality and ornamental effect. The methods by which these objects are attained should constitute a large part of the instruction in horticulture.

The work may be done through the means of lecture and text books with a sufficient amount of observation to fix the points well in the mind.

Notebooks required.

The following general topics will receive attention:

The order in which they should be taken up will depend upon the time of the year in which the topic is studied.

First: Germination. The conditions necessary for germination and the means of obtaining such conditions in garden practice should be illustrated by concrete examples. Note the development of the plantlet as influenced by the amount of heat, light and moisture.

Second: Roots. Determine by experiment what conditions favor the growth of the roots of plants; study the different types of roots with reference to needs of the plants, and to the processes of transplanting.

Third: Leaves. Determine the relation between leaf development and fruitfulness, what factors control leaf development?

Fourth: Buds. Note the difference between leaf buds and fruit buds. Note at what season of the year the fruit buds are formed and what treatment of the plant favors their development.

Fifth: Plant Reproduction. Note the different methods by which plants reproduce themselves and the advantages of each. Study all the different processes of artificial plant propagation. Practice grafting, budding, layering, etc.

Sixth: Plant Improvement. (1) Study the processes of crossing and selecting their effects, fruitfulness, quality and ornamental effect.

Seventh: The Work of Plants. Study the relation of plants to heat, light, moisture and plant food.

Eighth: Plant Culture. Learn what fruit and vegetable crops can be grown in your locality and the necessary conditions for success.

REFERENCE

Baily, Manual for Gardening.

Goff, Principles of Plant Culture.

Green, Vegetable Gardening.

Green, Fruit Growing.

Ivins, School Gardening.

HOME ECONOMICS.

(Cooking and Sewing)

Four Half-Units.

The time required for a unit of credit is five double periods per week for thirty-six weeks. It is intended that Course I, in either cooking or sewing will be accomplished before Course II, if either is attempted. Cooking I and Sewing I may alternate with each other through a year of thirty-six weeks, or they may be done separately in succeeding semesters of eighteen weeks each. Cooking II, should follow or accompany, if possible, the high school courses in physiology, botany and chemistry. Sewing II may be done at any time after Sewing I is completed.

The work outlined under textiles is intended to be given with the sewing and in the same periods. The part dealing with vegetable fibers should be given with Sewing I, and that dealing with animal fibers with Sewing II.

In order to save time that will otherwise be lost in beginning and closing, all periods of work in Home Economics should be double periods.

REFERENCES

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Bailey, Pearl L., Domestic science: principles and application. Webb, 1914.

Barrows, Anna, Home science cook book. Whitcomb, 1911.

Barrows, Anna, Principles of cookery. Chicago, American school of home economics.

Bevier, Isabel, Food and nutrition laboratory manual. Whitcomb (advanced).

Carpenter, F. G., How the world is fed. American, 1907.

Cooper, L. F., How to cut food costs. Good Health Publishing Co., Battle Creek, Mich.

Bevier and Van Meter, Selection and preparation of food. (Laboratory manual). Whitcomb.

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Conley, Emma, Nutrition and diet. American, 1913.

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Gibbs, W. S., Elements of Domestic Science. Lippincott, 1914.

Greer, Carlotta C., Textbook of cooking. Allyn.

Hill, Janet M., Up-to-date waitress. Whitcomb.

Hill, Janet M., Practical cooking and serving. Whitcomb.

- Jones, R. H., Experimental domestic science. Lippincott, 1915.
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- Mitchell, M. L., Fireless cook book. Doubleday.
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- Powell, Ola, Successful canning and preserving. Lippincott.
- Richards, Ellen H., First lessons in food diet. Whitcomb, 1914.
- Robinson and Hamel, Lessons in cooking through the preparation of meals. Chicago American School of Home Economics.
- Rose, Mary Swartz, Feeding a family. (Advanced). Macmillan, 1918.
- Scribner, Food guide for war service at home. Scribner.
- Sherman, H. C., Food products. Macmillan.
- Thompson, W. G., Practical dietetics. (Reference). Appleton.
- Wardell and White, A study of foods. Ginn.
- Administration of the Home.
- Aiken, Charlotte, Home nurse's hand book. Saunders.
- Aiken, Charlotte, Modern methods in nursing. Saunders.
- Andrews, Benj. R., A survey of your household finances. N. Y. Bureau of Publications, Teacher's College.
- Bryant, Louise S., School feeding. Lippincott. 1913.
- Devine, The economic function of women. N. Y. Bureau of Publications, Teacher's College.
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 Reeves, Millinery.
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- Boston Cooking School Magazine, 372 Boylston St., Boston.
 Country Life (new). Garden City, New York, Doubleday, Page & Co.
 Craftsman, D. 6 East Thirty-ninth St., New York, Craftsman Publishing Co.
 Delineator. New York, Butterick Publishing Co.

Good Housekeeping. 381 Fourth Ave., New York, Phelps Publishing Co.

Harper's Bazaar. New York, International Magazine Co.

Home Needlework Magazine. Florence, Mass. Florence Publishing Co.

House Beautiful. 3 Park Street, Boston, Mass. House Publishing Co.

Illustrated Milliner, 565 Broadway, New York.

Journal of Home Economics. Baltimore Md. Roland Park Branch.

Ladies Home Journal. Philadelphia, Pa. Curtis Publishing Co.

Milliner, The, 215 Market Street, Chicago, Ill.

MANUAL TRAINING.

Two Units.

Industrial subjects should be pursued by the pupils of the elementary grades in form of paper cutting, weaving, clay moulding, braiding, basketry, freehand drawing, sewing, sloyd, etc. In the sixth and seventh grades the girls should do some systematic sewing, and in the eighth grade, a course in cooking. In the sixth, seventh and eighth grades the boys should do bench work, etc. The work in freehand drawing should continue through the grades.

Definition—Manual Training is defined by the American Manual Training Association as any form of constructive work that serves to develop the powers of the pupil through spontaneous and intelligent activity. Manual training includes freehand and technical drawing; working in wood and metal; modeling in sand, clay or plaster; casting plaster clay or metal; domestic science; cooking; dressmaking; pattern-making; Swedish sloyd; Russian tool practice, etc.

Purpose—Its purpose is to educate the mind through the hand.

Grade 7.

Time: One hundred minutes a week in two periods.

Projects: Woodwork—Simple construction involving the four principal cutting tools: saw, plane, chisel and spoke-shave and the necessary laying out tools. Measuring, squaring board and game board. Planing (surface and edge cutting board). Vertical chiseling, gouging, paring, sharpening chisel, making rack for brushes, tools or brooms, and making pen tray. Bow sawing, modeling, sand papering, in making coat hangers, etc. Halving, nailing, finishing in making flower pot stand, bracket shelf, water sheel, etc., involving some form of groove joint.

Grade 8.

Time: Two hours a week in two periods.

Projects: Woodwork—Construction involving groove joint; towel roller and sleeve board. Exact work in planning, to make glue joint—bench hook, drawing board. Review of "form work" with more difficult modeling—hammer handle, canoe paddle. Mortise and tenon point, taboret, plant stand, book shelves. Carving—book rack, ends carved from original designs, form of joint for ends chosen by pupils.

High School.

Two units of work in manual training are offered in the high school. A syllabus of this work may be obtained by applying to the Board of Administration, Bismarck, N. Dak.

No pupil shall be eligible for the second credit in manual training without taking at least one-half credit in mechanical drawing. The courses in mechanical drawing are strongly recommended to all students taking any work in manual training.

Double periods of 80 to 90 minutes are urged in preference to single periods. In schools where this arrangement is not feasible single periods will be permitted; and the classes may thus finish one-half unit each year.

MECHANICAL DRAWING I.

One-half Unit.

One period a day throughout the year or two periods a day for one-half year.

The purpose of the course in the first year of the high school is to teach the pupils to make and read working drawings and sketches, to give a knowledge of geometric construction in its relation to mechanical drawing, to produce skill in the use of instruments by means of drills in the making of drafting conventions, to train the imagination and the power to visualize by teaching the fundamentals of projection.

Group I.

Free hand and mechanical lettering—Emphasis on placing, form, slant, spacing, texture of line.

Problems Suggested.

Gothic alphabets and figures. Upper case and lower case letters.

Group II.

Geometric construction—Use of T-square, triangles and instruments in drawing the different lines used in mechanical drawing.

Lines, tangents, angles, triangles, square, circle, pentagon, hexagon, octagon, etc.

Group III.

Conventional lines—Use of T-square, triangles, and instruments in drawing the different lines used in mechanical drawing.

Exercise sheets in lining, visible edge lines, invisible edge lines, center lines, projection lines, construction lines, dimension lines.

Group IV.

Orthographic projection — Three views of geometrical figures. Resolutions. Developments. Intersections.

Rectangular frame, box, try square flower pot, circular box, face plate, desk tray, link stool, taboret, etc.

Group V.

Simple mechanical drawing—The different views of objects involving the use of straight lines, circles, and tangents. Free hand mechanical drawing.

Rectangular prism, hexagonal prism, pentagonal prism, triangular pyramid, pentagonal pyramid, waste basket, stove pipe section, funnel, etc.

MECHANICAL DRAWING II.

One-half Unit.

One period a day throughout the year or two periods a day for one-half year.

The purpose of the course in the second year is to produce better technique in drawing, to develop an appreciation of constructive design, to give the student a working knowledge of the sketching and drawing of machine details, give a drill in tracing and blue printing, and to teach the questions and problems to be considered in the planning of a dwelling.

Group I.

Problems for manual training shops involving constructive designs.

Problems Suggested.

Book rack, shelves, stool, chair, table, gravel, box, tray, napkin holder, etc.

Group II.

Isometric and cabinet (oblique) projection.

Cube, cylinder, hexagonal prism, pentagonal prism, mortise and tenon joint, stool, saw-horse, cabinet, projection of some of the problems under Group I.

Group III.

Representation of screw threads, bolts and screws.

The helix, the Sharp V thread, U. S. standard thread, square thread, asme thread, bolts, set screws, machine screws, etc.

Group IV.

Working drawings of machine parts
Detail and assembled drawings,
tracing, blueprinting.

Wrench pulley, coupling, connecting rod, shaft, bearing globe valve, steam pump, etc.

Group V.

House and barn drawing—Style of roof, rooms needed, arrangement of rooms, beauty of exterior, tracing and blueprinting.

Cottage and two-story house. Floor plans, elevations, roof plans, details of cornice, water table, doors, windows, staircase, fireplace, etc.

REFERENCES

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 Coolidge and Freeman, Elements of general drafting. Wiley.
 Cross, Anson K., Mechanical drawing. Ginn.
 Crawshaw and Phillips, Mechanical drawing. Scott.
 Faunce, L., Elements of mechanical drawing. Manual.
 French, T. E., Engineering drawing. Manual.
 Mathewson, Frank E., Notes for mechanical drawing. Taylor.
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Miller, H. W., Mechanical drafting. Manual.
 Rouillion, Louis, Mechanical drawing. Prang.
 Spink, Constructive drawing, book one. Atkinson.
 Spink, Constructive Drawing, book two. Atkinson.
 Weick, Chas. Wm., Elementary mechanical drawing. McGraw.
 Weick, Chas. Wm., Mechanical drawing problems. McGraw.

MAGAZINES

American Cabinet Maker, New York.
 American Printer, New York.
 Architectural Record, Arch. Record Co.
 Architectural Review Bates and Guild.
 Art and Industry in Education, Columbia University, Teacher's College annual.
 Building Age, New York.
 Craftsman, Craftsman Publishing Co.
 Furniture Manufacturer and Artisan, Periodical Publishing Co.
 Furniture, Grand Rapids Furniture Record Co.
 Foundry: Trade Journal, Perton Publishing Co.
 Industrial Arts Magazine, Bruce Publishing Co.
 Manual Training Magazine, Manual Arts Press.
 National Building, Porter-Hodgson Co.
 Printing Art, University Press, Cambridge.
 Scientific American, Munn & Co.

FREE HAND DRAWING.

One-half Unit.

One year, forty-five minutes per day, one-half year unit of credit.

The aim is two-fold (1) an understanding of the fundamental art principles, (2) the acquisition of the ability to express that knowledge through drawing and painting.

The work falls under five main heads.

I. The study of the Principles of Design (balance, rhythm, and harmony). Specific problems illustrating each principle should be worked out, at least one being applied. The universal application of the principles should be continually pointed out.

II. The study of the Perspective. The study should include parallel perspective, angular perspective and oblique perspective.

III. The Representation of Still Life Groups in Pencil and Charcoal. Aims (1) good composition; (2) good character of forms (3) a correct representation of values; (4) good technique. For charcoal read page 28 "Art Education for High Schools." In pencil drawing aim for a simple rendering of larger values in broad definite strokes which keep the same direction. Use soft pencil and avoid working over a mass more than once. For illustrations see "Applied Arts Drawing Books," edited by Wilhelmina Seegmiller and "Progressive Lessons in Art Education in High Schools," published by Prang.

IV. The Painting of Nature Studies. Aims (1) good character in

form and color; (2) rendering of light and dark values seen in leaves, stems and flowers; (3) direct water-color handling. In order to secure the last aim lift the color from the cakes and allow them to mix in the brush and on the paper (not in the lid of the box) thereby producing a variety of color and brilliancy of effect. Work in mass (never outline first) with the flat side of the brush rather than the point. Never work over a color.

V. Study of Landscape: Refer to Seegmiller's "Applied Art Drawing Books" and "Art Education for High Schools." The following books are suggested for reference:

"Art Education in High Schools," published by Prang.

"Applied Art Drawing Books," edited by Wilhelmina Seegmiller.

Batchelder, E. A., The Principles of Design.

Batchelder, E. A., Design in Theory and Practice.

Branch, E. A., Illustrated Exercises in Design.

French and Micklejohn, The Essentials of Lettering.

Sanford, F. G., The Art Crafts for Beginners.

HIGH SCHOOL MUSIC

One-half Unit.

A syllabus has been carefully prepared by a competent committee and is obtainable from the Board of Administration, Bismarck, N. Dak. This should be obtained, studied, and followed as closely as possible in every high school.

BOOKKEEPING

One-half Unit.

This course should be discontinued except for short course students and those who enter too late for a year's work. This course should include a thorough drill in the elements of bookkeeping and practice in the use of the more common books of accounting, such as the day book, journal, cash book, sales book, check book, ledger, bills receivable and bills payable book, and trial balance and statement book. Students should be required to fill out and become familiar with such business forms as invoices, notes, drafts, checks, receipts, statements of account, etc. Farm and household accounts should predominate.

One Unit.

The full year course in bookkeeping should include, in addition to the work outlined for the half-year course above, advanced work in bookkeeping and business forms by using modern, up-to-date, independent, individual sets for the pupils. Make all work practical and common sense.

All transactions should be carried out by correspondence, thus reducing confusion to the minimum. Here also farm and household accounting should predominate.

TYPEWRITING

One Unit

In typewriting, what is known as the touch system should be

taught. By this method the pupils learn to use their fingers in operating the machine and keep their eyes off the keys. Celluloid caps may be fitted over the keys or a shield may cover the keys and operator's hand to assist in acquiring this method, but the use of blank keys is perhaps preferable to either of these, especially after the first four weeks.

Thorough training should be given in the care of the machine and in manifolding and tabulating.

It is recommended that pupils devote one hour per day throughout the school year to practice in typewriting and that they be given one-half unit of credit therefor. This will enable them to complete the unit of credit in typewriting in the two years during which it is presupposed the pupil will also take his work in shorthand.

FIRST HALF UNIT

Finger exercises and drills.

The lessons of the text books should be completed. The first object in this work is accuracy. The lessons when completed should be fastened together with a proper title page and should be neat and accurate throughout.

Machine dictation.

SECOND HALF UNIT

Finger exercises and drills.

While maintaining the accuracy required in the first year the pupils should strive to acquire speed throughout the second year's work. Pupils should acquire a speed of 40 words per minute from copy by the end of the fall unit course.

SHORTHAND

Two Units.

No credit should be given for work in shorthand unless the pupil takes typewriting in his course also. It is very desirable that pupils in shorthand pursue this study for two years. At the end of that time the student should be thoroughly equipped to do any ordinary stenographic work. This is a subject that requires close application and should not be pursued in the hope of finding it a snap course. These units require as much work as others of the high school course.

For stenographic work the student should pursue a full four-year high school course as stenographers are expected to possess broader scholarship than a special preparation in shorthand and typewriting. In fact, it would be better in most cases if the pupil were to pursue these special lines after completing this four years of high school work.

FIRST UNIT

During the first year of the work in shorthand thoroughness should be considered more important than speed. The principles of the system taken up should be thoroughly mastered and extensively reviewed. Drill on rules and their application and on sight reading. Pupils should study word-signs and abbreviations and read and transcribe shorthand plates.

SECOND UNIT

This course should include some advanced dictation course suited to the system of shorthand taught.

Shorthand penmanship drill.

Business letters and legal forms, practiced and dictated.

Shorthand plates, transcribed, practiced and dictated.

By the end of the year the student should have acquired a speed of 85 to 100 words per minute on new matter.

COMMERCIAL LAW

One-half Unit.

The following from the report of the Commission of the North Central Association of Colleges and Secondary Schools will serve as a guide:

Study the legal principles governing business relations, especially contracts, their nature, essentials, and effects; future sales, interest and usury, bills and notes, agency, partnership, corporations, real property and mortgage, liens, attachments, surety and guarantyship, bailment, common carrier, banking, fire insurance, landlord and tenant.

Text books should be supplemented by some study of cases (by way of illustration, discussions, and practice in drawing legal papers such as contract, note, bill of exchange, bill of sale, bill of lading, power of attorney, deed, mortgage, lease, notice of protest, etc.

REFERENCES

Advanced Grammar; Hoenshel, American Book Company.

An English Grammar; Wiseley, A. S. Barnes and Company.

An English Grammar; Milne, Silver Burdette and Company.

Elements of English Grammar; Webster, Houghton-Mifflin Co.

Elements of English Grammar; West, G. P. Putman's Sons.

Elements of English Grammar; Krapp, Charles Scribners.

English Grammar; Gowdy, Allyn and Bacon.

English Grammar; Kimball, American Book Company.

English Grammar for Common Schools; Metcalf, American Book Co.

English Grammar; Whitney & Lockwood; Ginn and Co.

English Grammar; Longmans, Longmans Green and Co.

Language and Grammar; Kittredge and Arnold, Ginn and Co.

Practical English Grammar; Prince, D. C. Heath and Co.

Practical English Grammar; Rand, McNally and Co.

Review of English Grammar; Allen, D. C. Heath and Co.

School Grammar; Maxwell, American Book Co.

Studies in the Science of English Grammar; Wiseley, A. S. Barnes and Co.

The English Language and Its Grammar; Mead, Silver Burdette Co.

HIGH SCHOOL GRAMMAR.

One-half Unit.

The aims of senior grammar are similar to those of senior arithme-

tic, viz: Comprehensive and intensive study of the subject for such mastery as was impossible four years before, and also the phase of the subject needed by the prospective teacher in presenting it to his classes.

If the teacher is masterful and independent of any particular book, it would be profitable to spend the semester on work devised or chosen from various texts kept on the shelves or in their own possession. This would give rise to differences of view and, with a skillful teacher, to reconciliation later on. As in arithmetic, every topic of grammar should be investigated, but the fundamental principles should not be lost sight of in discussion over minor and merely formal details. Grammar should be built up, or developed as other sciences in accordance with inductive procedure—examining and classifying materials as in chemistry or botany. It is a thought subject par excellence. The emphasis should, of course, be laid on the sentence analyzed into its various parts, and on the kinds and relations of these parts.

HIGH SCHOOL WRITING AND SPELLING.

One-half Unit.

(Part of the Sixteenth Unit).

Very little if any writing should be done in copy books in high school. In fact, if an instructor is qualified to put the copies on the blackboard and direct the pupils in their practice, much better results may be obtained by the use of loose practice paper than with the copy book. The forearm, or “muscular” movement, should be cultivated and for this purpose the teacher and pupils will find a great deal of helpful material in such publications as the *Penman’s Art Journal*, *The American Penman*, and *The Business Educator*.

The words in the exercises in spelling should be those commonly used in correspondence, in reporting and in business.

HIGH SCHOOL ARITHMETIC

One-half Unit.

The aim of this course is a thorough knowledge of the essentials of arithmetic. This course should result in accuracy, rapidity, neatness, the reason why, and the ability to state that reason in good English.

Much stress should be laid upon rapid oral work and to the statement of definitions and principles. The pupils should be taught the various kinds of checks in solving problems. To determine the character of the teaching and the progress of the class standard arithmetical tests like the *Courtis*, *Stone* and *Woody* should be given.

This course includes the writing and reading of decimal fractions through millionths with ease and rapidity; a general discussion of reduction; scale and graphs as used in different phases of arithmetic; a thorough review of the fundamental processes in whole numbers, common fractions, and decimal fractions; aliquot parts and short methods in multiplication and division; tests of divisibility, fractions, multiples; powers and roots of small numbers; commercial statements and commercial paper; business forms such as notes, checks, drafts, etc.; the study

of interest tables, insurance rate books, table of freight rates, postal rates, etc.; the three cases in percentage—to find any percent of a number, to find a number when a certain percent is given and to find what percent one number is of another; the conversion of any percent to common and decimal fractions; commercial and bank discount; taxes, stamps; time, circular, linear, square, cubic and capacity measures; avoirdupois weight; board measure; square root; measurement of surfaces and solids including cones, cylinders and spheres; elements of the metric system; problems involving purchase by the ton and the thousand. Problems relating to land measuring, to the capacity of granaries, bins, cisterns, etc., should be stressed. An effort should be made to explain mathematical instruments in current use, such as water meters, light meters, cyclometers, adding machines. Samples of such devices should be added to the equipment of the school as opportunity affords.

These topics should be omitted: addition, subtraction, multiplication, and division of denominate numbers, tables of English money and troy and apothecaries' weight; averaging accounts; stock-jobbing, compound proportion; custom house business; partnership; duodecimals; arithmetic and geometrical progressions; alligation; unreal fractions, cube root; long method in greatest common divisor.

HIGH SCHOOL GEOGRAPHY

One-half Unit.

The object of this course is to give the pupil a practical insight into geography. It should enable him to see the relation existing between the different phases of the subject. This is necessary not only for one who enters into business life, but for one who intends to teach geography.

Geography in this course should be taught so as to enable the pupil to see the influence the physical features have upon the industries and life of a people. It should be made clear that an equally important matter is the government of a country. This course, therefore contemplates a union of the physical, the political and the economic phases of geography, especially those of North Dakota. Our resources should be thoroughly fixed in mind.

The following outline of work is suggested:

- I. Review of the 7th grade geography—
 - Motions of the earth and consequent results.
 - Map drawing of the different continents.
 - Brief review of tides, ocean currents—atmosphere.
- II. Physical features of principal countries—
 - Physical features of the chief commercial countries—those affecting the life and industries of a people.
 - Formation of soil, coast-lines, river systems;
 - General topography;
 - Detailed study of North Dakota with special attention on the results of glaciation.

III. Political Divisions—

Brief study of the governments of the leading commercial nations of the world with map of each.

Characteristics of people.

Immigration and migration of people—special reference to the U. S.—and the results.

IV. Economic Geography—

A. United States.

1. Plant and animal products.

2. Natural resources—mineral, water, forests, etc.

3. Tendencies towards centralization and concentrations with their causes and results.

4. Centers of industries, reasons and location.

5. Transportation.

Waterways, railroads, merchant marine, canals, operation, communication.

6. Government.

How it affects our industries—tariffs, legislative regulation, recent economic legislation.

7. Commerce—imports, exports and domestic commerce.

B. A similar but not extensive treatment should be given to the leading nations of the world.

C. International rivalries in commerce.

LIST OF REFERENCES

High School Geography, Dryer, American Book Company.

Commercial and Industrial Geography, Keller and Bishop, Ginn and Co.

Commercial Geography, Brigham, Ginn & Co.

History of Commerce, Olive Day; Longmans, Green and Co.

Physical Geography, Davis, Ginn and Company.

Consular Reports, Washington, D. C.

Year Book.

Statistical Abstract of U. S.

PSYCHOLOGY

One-half Unit.

The object of the high school course in this subject is the fulfillment of the legal provision regarding certification of high school graduates; and since the actual value of the subject consists entirely of the professional gain accruing to the teacher, the work should conform to the modern trend of psychology for teachers. This for a decade or more has been nearly altogether in the nature of a scientific investigation and exposition of methodology, as governed by the nature of the child and of the subject-matter. Leading universities have banished the old introspective "general" psychology from their departments of education, normal schools have most of them done likewise, and the high school will do well to follow the example thus set.

The three leading factors to be considered in this course are: (1)

The learning process, including economy of the same, (2) standardized measurements of results, in order that there may be a proper evaluation of teacher, pupils. and methods; and (3) individual differences, with significance from teacher's stand point.

Important topics, subordinate to the above, are the following: (1) fatigue; its bearing on length of recitation, order of subjects in the daily program, etc.; (2) the changing periods of childhood, and the accompanying changes in play and other activities; (3) child morality and habit-formation; and (4) attention and interest. The foregoing topics should be studied with emphasis on their meaning in connection with the school.

SCHOOL MANAGEMENT AND METHODS OF INSTRUCTION

One-half Unit.

(It is planned to prepare a syllabus on this subject at an early date)

(a) School Management. This course includes the planning, assigning and teaching of lessons with a view to conserving interest and attention of pupils; the relation of the teacher to the child's moral nature, and the securing of a maximum of self-control in the child; proper physical conditions of the school room; the teacher's right relation to the playground activities.

There should be a study of the powers and duties of the State Board of Administration, the State Superintendent, the County Superintendent, and the School Board, with some instruction in the ethics of contracts in the latter connection; and the relation of States Attorney and Attorney General in regard to enforcement of school laws; also the relation of Health Boards to communities.

Some observation and practice-teaching should be done in connection with the course and preferably in the rural schools; but both will be useless unless the observation is preceded by instruction on what to observe, and is followed by report and discussion on same; and unless the teaching is done under expert direction and supervision.

(b) Methods of Instruction. This course should include a variety of educational principles at present commonly classed as "general methods" and a liberal amount of study of specific methods and aims of the various common branches. The student should acquire some ability to weigh and evaluate both the subject and the method and this ability plus certain psychological principles from the course in elementary psychology, should be utilized in the construction of a satisfactory daily program for a rural school.

There ought also to be instruction on special rural school needs, and on desirable and feasible lines of extension of rural school activities. Aid of this sort is especially needed by the town boy or girl who is preparing to fit into a country community.

The relation of health to school work and some instruction in the common problems of health and sanitation, should form a part of the course. The various types of rural schools, with standardization and consolidation, should be studied. At some time in the course a few days ought to be spent on the latest official course of study for rural schools.

VIII. SYLLABI.

The following syllabi are available and may be had by addressing the Secretary of the Educational Commission, Bismarck, N. Dak. The price of each is ten cents.

Agriculture.

English I—first half.

English I—second half

English II—first half.

English II—second half.

English III—first half.

English III—second half.

English IV—first half.

English IV—second half.

Manual Training.

Textiles and Sewing.

Domestic Science and Art.

Civics.

High School Music.

History, United States and Civics.

Physiology.

General Science.

IX. RECOMMENDED PROGRAM OF STUDIES FOR HIGH SCHOOLS.

The subjects designated as constants for the pupils are one full unit each of English I, English II, and either English III or English IV, High School U. S. History, Civil Government, one-half unit of Elementary Economics, one-half unit of Social Problems, one unit of Science, and one unit of Physical Training, allowing one-quarter unit of credit in the latter subject each year of the high school course.

For constants for the school see page 20.

Name of Subject	Year to be Studied	Synopsis Pages
Algebra, Elementary	9 10, or 11	42
Agriculture, See Syllabus.....	10, or 11	71
Biological Science	9, 10 or 11	60
Civics, $\frac{1}{2}$ unit, See Syllabus.....	12	50
Drawing, Freehand, $\frac{1}{2}$ unit.....	9	80
Cooking I, $\frac{1}{2}$ unit, See Syllabus.....	9	73
Chemistry or Physics.....	11, or 12	66, 68
English I, See Syllabus.....	9	25
English II, See Syllabus.....	10	26
English III, See Syllabus.....	11, or 12	26
English IV, See Syllabus.....	11, or 12	26
Economics, $\frac{1}{2}$ unit.....	11, or 12	49
Geometry, Plane	10, 11, or 12	41
History, Adv. U. S., See Syllabus.....	12	50
*History, General I.....	10, or 11	44
*History, General II.....	11	47
Manual Training, $\frac{1}{2}$ or more units, See Syllabus	9, and 10	78
Mechanical Drawing I, $\frac{1}{2}$ unit.....	10, or 11	78
Music, Vocal, $\frac{1}{2}$ unit, See Syllabus.....		81
Sewing I, $\frac{1}{2}$ unit, See Syllabus.....	10	73
Social Problems, $\frac{1}{2}$ unit.....	11, or 12	51
Physical Education, one unit.....	9, 10, 11, and 12	55

Electives.

Commercial Subjects:		
Bookkeeping	9, 10, or 11	81
Geography, High School, $\frac{1}{2}$ unit.....	11	85
Law, Commercial, $\frac{1}{2}$ unit.....	11, or 12	83
Shorthand I, $\frac{1}{2}$ unit.....	11	82
Shorthand II, $\frac{1}{2}$ unit.....	12	83
Typewriting I, $\frac{1}{2}$ unit.....	11	81
Typewriting II, $\frac{1}{2}$ unit.....	12	82
Writing and Spelling, $\frac{1}{2}$ unit.....		84

*Students should take both courses, always taking General History I first.

ELECTIVES

Foreign Languages:

Caesar, Latin II.....	10, or 11	36
Cicero, Latin III.....	11	37
French I	9, 10, or 11	27
French II	10, 11, or 12	27
German I	9, 10, or 11	29
German II	10, 11, or 12	29
Latin I, Grammar.....	9, or 10	32
Norse I	9, 10, or 11	29
Norse II	10, 11, or 12	29
Spanish I	9, or 10	30
Spanish II	10, or 11	31
Vergil, Latin IV.....	12	38

Mathematics:

Correlated Mathematics	9, 10, and 11	42
Algebra, Advanced, $\frac{1}{2}$ unit.....	11, or 12	43
Arithmetic, High School, $\frac{1}{2}$ unit.....	11, or 12	84
Geometry, Solid, $\frac{1}{2}$ unit.....	11, or 12	41
Trigonometry	11, or 12	42

Miscellaneous:

Common School Course.....	7, and 8	22
Bible Study, $\frac{1}{2}$ unit.....		25
Drawing, Mechanical II, $\frac{1}{2}$ unit.....	10, or 11	79
Pedagogy, $\frac{1}{2}$ unit.....	12	87
Psychology, $\frac{1}{2}$ unit.....	12	86
Grammar, High School, $\frac{1}{2}$ unit.....	12	83
Sewing II, See Syllabus.....	10, 11, or 12	73

Sciences:

Agriculture, one unit, See Syllabus.....	10, or 11	71
Botany I, $\frac{1}{2}$ unit.....	9, or 10	62
Botany II, $\frac{1}{2}$ unit.....	10, or 11	63
Chemistry	11, or 12	66
Cooking II, See Syllabus.....	10, 11, or 12	73
General Science, See Syllabus for Grades.....	8, or 9	53
Horticulture, $\frac{1}{2}$ unit.....	10, or 11	72
Physiography, one or $\frac{1}{2}$ unit.....	9, or 10	56
Physiology, $\frac{1}{4}$ unit, See Syllabus.....	10, or 11	54
Physics	11, or 12	68
Zoology I, $\frac{1}{2}$ unit.....	9, or 10	64
Zoology II, $\frac{1}{2}$ unit.....	9, or 10	65

X. NORTH CENTRAL ASSOCIATION OF COLLEGES AND SECONDARY SCHOOLS.

The standards by which schools are accredited by this association are somewhat higher than those standards required for classification in this State. It will, therefore, doubtless be of general interest to know that 41 of North Dakota's high schools are members of the above association. The following paragraphs from the last statistical report of this association give a very good idea of its purposes:

"The aim of the North Central Association of Colleges and Secondary Schools is, first, to bring about a better acquaintance, a keener sympathy, and a heartier co-operation between the colleges and secondary schools of this territory; second, to consider common educational problems and to devise best ways and means of solving them; and, third, to promote the physical, intellectual, and moral well-being of students by urging proper and sanitary conditions of school buildings, adequate library and laboratory facilities, and higher standards of scholarship and of remuneration of teachers."

The association is, beyond all doubt, the most generally recognized standardizing educational agency in the northwest,—if indeed it does not rank first in prestige in the entire United States. It includes in its territory eighteen states, and in its membership 135 institutions of higher education and 460 institutions of secondary rank. It is a distinct honor for any institution to be affiliated with this body. This association's official recognition gives prestige to a school among educated men and women everywhere. Its recorded approval is a letter of introduction to all colleges, universities and professional schools in the land.

Standards.

To be accredited by the North Central Association, a high school must attain the following standards:

1. Graduation requirements—
 - A. At least fifteen units.
 - B. School year of at least thirty-six weeks.
2. Scholastic attainments of teachers—
 - A. Equivalent of graduation from four years' standard college course.
 - B. Professional training of at least eleven semester hours in education.
 - C. Approval by the commission of any teacher of less attainments.
3. Periods of daily classroom instruction—
 - A. Should not exceed five (four if supervised); in no case to exceed six (five if supervised).
 - B. Minimum length, forty minutes in the clear. Double period for laboratory or supervised study.
4. Adequate library facilities for subjects taught.
5. Hygienic conditions of the buildings as to location, construction, and essential parts.

6. High rank as regards efficiency of instruction, acquired habits of thought and study, and the general intellectual and moral tone of the school.
7. Rating in highest class by the properly constituted educational authorities of the state.
8. Proper making and filing of report with the inspector.
9. Reasonable number of pupils per teacher.
10. Evidence of approval of standards and formal application by the local school board.

Term of accrediting is in all cases limited to one year. If a state fails for two years in succession to send one or more representatives to the annual meeting of the commission, the schools of that state may, by vote of the association, be dropped from the accredited list.

A school desiring further information relative to the standards of this association, should write the State High School Inspector, Bismarck, N. Dak.

XI. PUBLISHERS.

Allyn & Bacon, Boston (Texas School Book Depository, or Southern School Book Depository, Dallas).

American Book Co., Chicago, Ill. (Southern).

American School of Home Economics, Chicago.

D. Appleton & Co., Chicago. (Texas School Book Depository).

Atkinson, Mentzer & Co., Chicago. (Southern).

Bobbs-Merrill Co., Indianapolis.

Bradley Art Co., New York.

Bruce Publishing Co., Milwaukee.

Dodd, Mead & Co., New York.

Doubleday, Page & Co., New York.

Duffield & Co., New York.

Ginn & Co., Chicago.

Heath, D. C. & Co., Chicago. (Southern).

Henry Holt & Co., New York. (Southern).

Houghton, Mifflin & Co., Chicago.

Industrial Arts Magazine, Milwaukee.

Longmans, Green & Co., New York. (Southern).

Lyons & Carnahan, Chicago.

McClurg, A. C. & Co., Chicago.

Macmillan Co., Chicago.

Manual Arts Press, Peoria, Ill.

Maynard & Merrill Co., New York.

Merrill Co., Charles E., Chicago.

Prang Co., The, New York.

Rand, McNally & Co., Chicago.

Row, Peterson & Co., Chicago.

Sanborn, B. H., Chicago.

Scott, Foresman & Co., Chicago.

Silver, Burdett & Co., New York.

Stokes, F. A., New York.

University of Chicago Press, Chicago.

Webb Publishing Co., St. Paul.

World Book Co., New York.

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